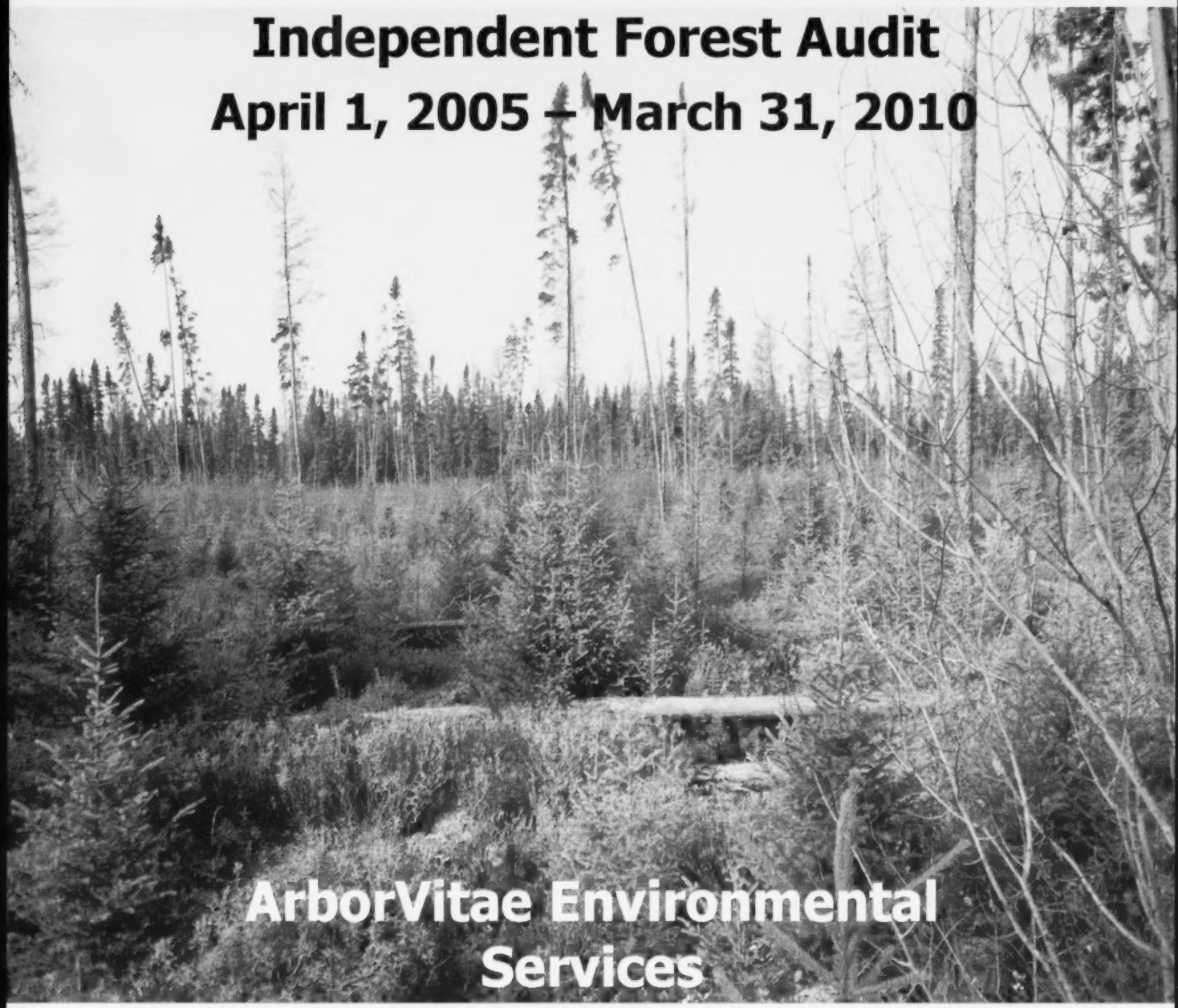
Gordon Cosens Forest

Independent Forest Audit

April 1, 2005 – March 31, 2010



ArborVitae Environmental Services

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1.0 EXECUTIVE SUMMARY

This Independent Forest Audit (IFA) of the Gordon Cosens Forest examined the performance of Tembec, which is the forest manager and holder of the Sustainable Forest Licence (SFL) for the Forest, and the Ministry of Natural Resources (MNR). The audit covered activities undertaken between April 1, 2005 and March 31, 2010, which coincides with the term of the 2005 Forest Management Plan (FMP). The five-person audit team reviewed a wealth of documentation, interviewed MNR and Company staff, stakeholders and interested First Nation representatives. At least 10% of the amount of each major operation undertaken during the audit period was reviewed; in many cases, between 15-20% of the operations were viewed either from truck or helicopter.

The audit term also covers the development of the 2010 FMP, which turned out to be a two-year Contingency Forest Management Plan (CFMP) rather than a normal ten-year FMP. In effect, the CFMP is the first part of the 2010 FMP – it covers the first two years of the 2010-2020 period while a full 2010 FMP is being developed. The full FMP is scheduled to come into effect on April 1, 2012 and run until March 31, 2020. The main reason that the Company and MNR decided to produce a two-year CFMP, rather than a full ten-year FMP, was to wait for the Caribou Conservation Plan and the caribou Habitat Regulation to be available to provide direction. The impact of these requirements on the management of the Forest was expected to be significant and it made little sense to develop a full plan that would likely need major modification soon after it came into force. Although the habitat regulation is not yet available, direction is emerging, and it is being incorporated into the full 2010 FMP. The audit team concurred with the decision to produce a CFMP.

The audit found that the Company and MNR performed well during the audit period, adhering to the general plan direction and preparing a high-quality CFMP. The economic recession and the negative impacts it has had on the sector led to a reduced level of activity, with less than 50% of the planned harvest area actually being cut. Despite this, neither the Company nor MNR shortchanged their responsibilities. The Company's silviculture program was generally excellent and the harvested area is being renewed. The audit team awarded the planning team and the Company and MNR a best practice for the decision to use the spatial model Patchworks to develop the LTMD for the 2010 CFMP. Using Patchworks increased the planning costs and demanded more time from the Planning Team, but resulted in a superior plan. The audit team was also impressed by the good relationships between the Company, District MNR, stakeholders and a number of First Nations, although the Moose Cree have some important concerns with management of the Forest that will be challenging to address in a manner that is acceptable to all parties.

The audit team issued a total of eleven recommendations plus a twelfth to extend the term of the SFL. Almost all of the recommendations were issued jointly to the Company and MNR, emphasizing that most of the issues identified in this audit were not issues with the management systems of the Company or MNR, but were more complicated

problems. Only one recommendation was directed solely at the Company – regarding slash management – however there was a second related recommendation primarily directed towards MNR and involving Company input. Another recommendation, related to disturbance cycles used in planning, was directed solely at Regional MNR.

Only two of the four most significant concerns on the Forest were the subject of recommendations. The question of the appropriate management of caribou habitat is being addressed in the full FMP, as discussed. The second issue, a lack of markets for OSB poplar, has led to that segment of the harvest sometimes being left at roadside. The lack of demand for OSB poplar is related to broader economic conditions and policy, and there is little that the audit team could recommend that would enable the auditees to address the problem in the near term. The provincial government has embarked on policy changes related to tenure, including the retraction of unused wood supply commitments, that could lead to longer term improvements.

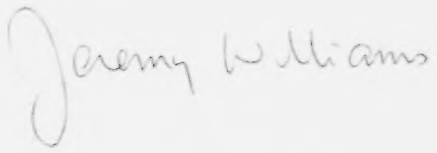
It is a challenge on all forests to maintain a high quality remote tourism experience juxtaposed with harvesting and renewal, and the attendant access construction. The Gordon Cosens Forest is no different in this respect. The audit team recommended that MNR lead an update of the land use direction in the Chapleau part of the Forest to reflect the priority of maintaining the functional remoteness of lakes used by remote tourism operators. A recommendation was also directed to the Company and MNR to develop clearer direction regarding the use and removal of the Groundhog River bridge and piers, and to ensure that the direction is included in the FMP.

The fourth major concern was identified late in the audit process when the MNR invited the lead auditor to present draft audit findings to the Moose Cree. This was the first time during the audit that the Moose Cree had discussed substantive issues. They strongly opposed timber harvesting in trapline areas, which is challenging since the entire Forest has traplines on it. The audit team encountered varying opinions regarding the extent and nature of the impacts of harvesting on traplines, and clearly those impacts are dependent on site-dependent factors. The audit team prepared a recommendation that encourages the District MNR, Company and Moose Cree to continue to examine potential approaches to improving the compatibility of timber and fur harvesting, since the current situation satisfies no one. A second recommendation is directed at Corporate MNR in recognition that the issue has broad policy dimensions.

More narrowly targeted recommendations were issued with the intent of improving silvicultural effectiveness monitoring, slash management, training related to road construction, and the elimination of safety risks due to derelict bridges. A recommendation was also issued to clear up confusion around sharing the veneer/sawlog portion of the poplar harvest. The audit team felt that planning would be improved if a more realistic and comprehensive disturbance cycle was used in modeling.

The audit team reviewed a number of criteria related to sustainability, and found that the main concerns on the Forest are being dealt with. The field inspections showed a high level of performance and there were a low number of non-compliance issues. The audit team concluded that management of the Gordon Cosens Forest was generally in

compliance with legislation, regulations and policies that were in effect during the term covered by the audit, and the Forest was managed in compliance with the terms and conditions of the Sustainable Forest Licence held by Tembec. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends the Minister extend the term of the Sustainable Forest Licence #550039 for a further five years.



Jeremy Williams,
Lead Auditor

2.0 TABLE OF AUDIT FINDINGS

Recommendation on Licence Extension
The audit team concludes that management of the Gordon Cosens Forest was generally in compliance with the legislation, regulations and policies that were in effect during the term covered by the audit, and the Forest was managed in compliance with the terms and conditions of the Sustainable Forest Licence held by Tembec. Forest sustainability is being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends the Minister extend the term of Sustainable Forest Licence #550039 for a further five years.
Best Practice
1. The Planning Team, Company and MNR are commended for using the spatial modelling tool Patchworks as a basis for preparing the Long Term Management Direction for the 2010 CFMP.
Recommendations Directed to the SFL Holder/MNR District(s)
1. Tembec, in collaboration with the Moose Cree and MNR, will continue to seek ways of mitigating the impacts of timber harvesting operations on traplines.
3. By March 31, 2012 MNR shall, incorporate consultations with the forest and tourism industries and review and update CLUPA policy G1770 to comprehensively address the present circumstances regarding remote tourism operations in the Chapleau portion of the Gordon Cosens Forest.
4. The Company and MNR will finalize a complete use management strategy for the "temporary" segment of the Beardmore Road that includes the bridge crossing over the Groundhog River, and incorporate this into the full 2010 FMP. The use management strategy will cover all road and bridge use up to and including any planned removal of the bridge structure and cement piers.
6. The Company shall continue to improve its slash management program and reduce the area of productive forest affected by piled slash.
7. MNR and the Company shall review the appropriateness of revising the slash pile burning requirements on the GCF with the intent of providing sufficient scope for the Company to be able to institute a slash pile burning program that is affordable.
8. The MNR and the Company shall identify all bridges on the Forest which are in states of disrepair. In consultation with other relevant parties (i.e. road user-groups and other industries), the MNR and the Company shall identify and implement action plans for removing, repairing, or replacing the bridges as appropriate.
9. The Company shall ensure that employees and contractors responsible for road construction and maintenance are adequately trained to avoid circumstances which can lead to deleterious environmental impacts. The MNR shall provide oversight of the training provided to staff and contractors of Overlapping Licence Holders.
10. The District MNR and Company shall review the objectives of the Silvicultural Effectiveness Monitoring program, and develop an integrated approach that optimizes the effort required to meet those objectives. The approach should consider the Company's FTG program, the District SEM program and the Forest Resource Inventory as sources of information that could be used to design and implement the optimized SEM program.
11. MNR should work with the Ministry of Northern Development, Mines and Forestry and the SFL-holder develop a set of unambiguous and achievable commitments for the veneer/sawlog grade portion of the aspen harvest.
Recommendations Directed to Corporate MNR
2. Corporate MNR will discuss with Nishnawbe-Aski Nation and the forest sector how the co-

existence of timber management and trapping can be improved.
5. MNR Region shall provide input into FMPs which replaces the present 'post-suppression fire cycle' with a 'disturbance cycle' which includes impacts of fire, insects, and wind damage. In calculating the fire-cycle component of the 'disturbance cycle', MNR shall use a more cautious approach to estimating the post-suppression fire cycle than is presently employed, taking into account the relative scarcity of data available for the calculation.

3.0 INTRODUCTION

This chapter provides context for the audit, both in relation to the audit basis and process and in relation to the Gordon Cosens Forest. Section 3.1 provides a high-level description of the audit scope, process, and input received – a more detailed description can be found in Appendix 4. The key characteristics of the Gordon Cosens Forest and some key issues that have created challenges in past audits and plan periods are identified in sections 3.2 and 3.3, respectively. These issues were among those that merited special attention during the audit. The chapter concludes with a summary of input received into the audit.

3.1 AUDIT PROCESS

The Crown Forest Sustainability Act (CFSA), and one of its Regulations (160/04), directs the Minister of Natural Resources (MNR) to conduct a review of each of the province's managed forests every five years to ensure that the licensee has complied with the terms and conditions of the Crown Forest Sustainability Act, its Sustainable Forest Licence (SFL), its forest management plan and other regulatory requirements. The effectiveness of operations in meeting plan objectives, improvements made as a result of prior IFA results, are also to be assessed. The Independent Forest Audit Process and Protocol (IFAPP) also requires the audit team to provide a determination regarding the sustainability of forest management and whether the term of the SFL should be extended (the Regulation also includes the latter requirement). A detailed description of the scope and process of an IFA is set out in the IFAPP, which contains some 150 audit procedures and is available on the Ministry of Natural Resources website.

The Gordon Cosens Forest is managed by Tembec under the authority of Sustainable Forest Licence #550039. This IFA covers the five-year period from April 1, 2005 to March 31, 2010, which happens to encompass all five years of the 2005 FMP period. The audit window also spans the period during which the 2010 Contingency Forest Management Plan was developed, and so the process of developing that plan is reviewed in this audit.

Each IFA reviews the performance of both the SFL-holder, which is Tembec in this case, and the MNR. In other words, the accomplishments of both parties with responsibilities related to forest management are covered by the audit. ArborVitae Environmental Services Ltd. undertook this IFA using a five-person team. Profiles of the team members, their qualifications and responsibilities, are provided in Appendix 6.

3.2 MANAGEMENT UNIT DESCRIPTION

The Gordon Cosens Forest is located in northeastern Ontario (Figure 1). The largest community in the Forest is Kapuskasing (population approx. 8,500[1]); other communities include Fauquier, Moonbeam, Val Rita, Opasatika and Mattice-Val-Cote. The Forest is bisected by Highway 11, the major east-west route through northeastern Ontario.

[1] According to the 2006 Census.

The community of Kapuskasing (named McPherson until 1917) was established as the Canadian National Railway was extended westward from Cochrane during the 1908-1918 period. A sawmill in the community began operations during this time, primarily producing rail ties and lumber. In the early decades of the 20-th century, an initial wave of pulp and paper mills was constructed in Ontario, supported by extensive licence areas. One of these early pulp mills was constructed in Kapuskasing and it began operating in 1922. Its original timber limit was 4,500 km^2, which was almost trebled in size in 1925, forms the core area of the present day Gordon Cosens Forest. In 1926, the company came under the joint ownership of Kimberly-Clark and the New York Times, and a newsprint mill was added to the site. The mill and facilities were purchased by Tembec in the early 1990's, and the licence for the associated woodlands was transferred to Tembec at the same time.

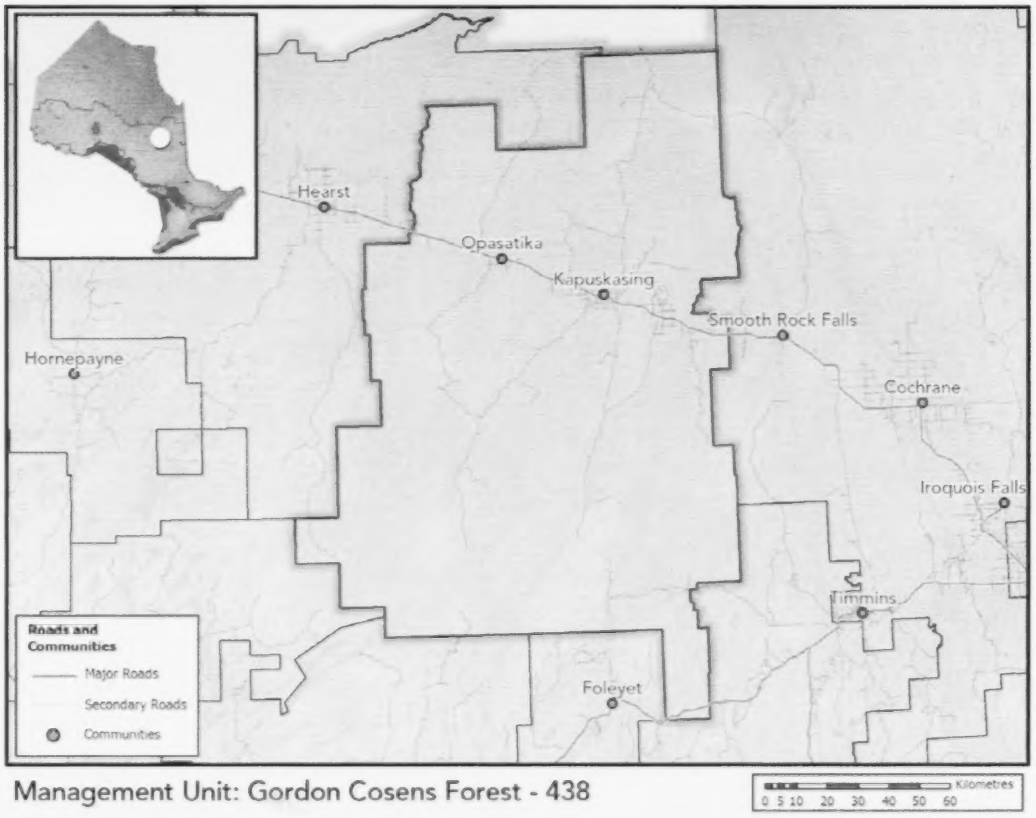


Figure 1. Overview map of Gordon Cosens Forest, with provincial location inset.

The Forest resides entirely within the areas covered by Treaty No. 9, established in 1905-06. Although there are no Aboriginal communities within the Gordon Cosens Forest, many First Nations have interests in the Forest: Moose Cree First Nation, Taykwa Tagamou Nation (New Post First Nation), Constance Lake First Nation, Chapleau Cree First Nation, Missanabie Cree First Nation, Brunswick House First Nation, Mattagami First Nation, Matachewan First Nation, and Flying Post First Nation.

Portions of the forest fall within three MNR districts, Hearst, Chapleau, and Timmins. Since approximately 70% of the Forest falls within the Hearst District, it is the lead administrative district.

Today, the Forest encompasses approximately 20,000 km^2, of which approximately 17,300 km^2 is Crown Managed Forest. Fifteen thousand square kilometers of the Crown Managed Forest are classed as productive forest.

The Gordon Cosens Forest is primarily located in the Clay Belt region and is decidedly boreal in nature. The area's poor drainage and cold climate (mean annual temperature 1° C) limit the diversity of tree species growing there. Black and white spruce are the dominant species on the Forest. Figure 2 shows this, with black spruce dominating the poorly drained lowland areas (included in the MCL area) and mixing with white spruce in uplands. Other typical boreal species such as trembling aspen (poplar), white birch, and tamarack are also very common. Jack pine is less common on the Forest, being confined primarily to the four corners of the Forest which are out of the Clay Belt zone. As is evident from Figure 2, the Forest generally has a rather bi-modal age-class distribution, with relatively less area in the middle age classes compared with the young and old ages.

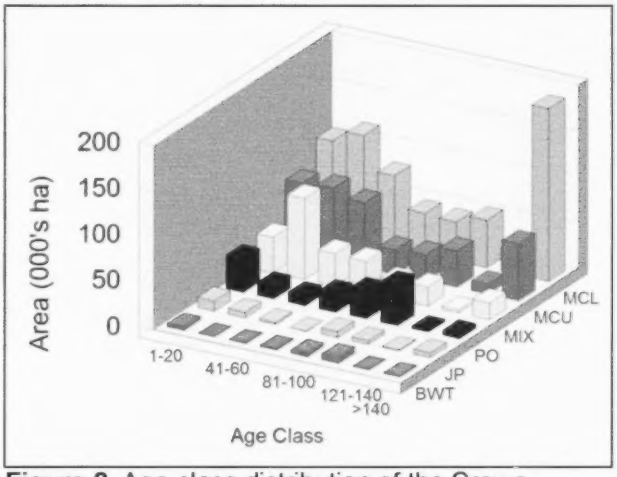


Figure 2. Age-class distribution of the Crown production portion of the Gordon Cosens Forest. (Source 2010 CFMP, Table FMP-2. BWT= white birch, JP – Jack Pine, PO- Poplar, Mix – Mixedwood, MCU – Mixed Conifer Upland, MCL – Mixed Conifer Lowland).

The global recession of 2008-10, which has proven to be especially severe and long-lasting in the United States, has curtailed roughly half of the harvesting in Ontario during 2009 and 2010. The forest management activities on the Gordon Cosens Forest have not escaped the impacts of the downturn. At the time of writing, several of the mills which used fibre from the Forest during the early part of the audit period have been closed for extended periods, including the Smooth Rock Falls pulp mill (permanent closure), Tembec's sawmills in Timmins, Kapuskasing, Hearst and Cochrane, the Lecours Lumber sawmill in Hearst, Grant Forest Product's OSB mill in Timmins, Columbia Forest Products plywood mill and the True North plywood mill. These closures and curtailments have resulted in significant decreases in most management activities on the Forest. During the audit period only 56% of the planned harvest area was actually cut, triggering reductions in many silvicultural activities. This issue is further explored in Section 4.4.

The Gordon Cosens Forest provides a wide array of recreational and tourism-related activities. Hunting, fishing and snowmobiling are very popular among local residents and tourists. The 2010 CFMP reports that in 2006 there were approximately 2,700

fishing and 2,900 hunting licenses sold for the Gordon Cosens Forest. Twenty-nine commercial tourism operators have an interest in the Forest, 36 Bear Management Areas and 88 traplines are fully or partially within the Forest.

The Forest has the typical array of boreal wildlife species, including moose, bear, wolves, lynx, marten and a wide variety of songbirds. Of particular note is the presence of woodland caribou on the Forest. Woodland caribou is designated as a threatened species under COSEWIC (Committee on the Status of Endangered Wildlife in Canada), and there are considerable demands on the forest industry to attempt to minimize the impacts of its activities on caribou and design harvesting layouts in a manner that promotes habitat retention and creation. The CFMP provides more detailed information regarding the species of interest on the Forest.

3.3 CURRENT ISSUES

During our initial review of the CFMP, the previous IFA, and related material, several priority areas emerged which received specific attention by the audit team.

Accommodating other Users of the Landbase.
The 2005 IFA report and the list of issues identified during the development of the 2010 CFMP have indicated that there have been concerns associated with reconciling industrial forest activities and infrastructural requirements with the needs of other users of the landbase. This is an issue on almost every forest management unit in the province; it stems from the multiple use of the parts of the Forest that are available for timber harvesting, and are also licensed for trapping and used by remote tourism outfitters to provide a wilderness experience.

On the Gordon Cosens Forest, most of the access issues are present in the southern part of the Forest, in the portion that falls within the Chapleau District. There is a high concentration of remote tourism operators based there and that area is targeted for a considerable amount of harvest operations in the coming decade. Due to the potential for conflict and the distance from the mill, the Company had avoided harvesting in this part of the Forest, but the forest there is now mature, and the Company wishes to harvest it while it is still merchantable. During the audit, this issue remained as one of the major management challenges on the Forest.

A second conflict arises between trappers and forest harvesting. The greatest source of conflict occurs when harvesting takes place on a trapline – in some cases, the majority of forest around a trapline may be harvested in a short period of time. This effectively makes the area unproductive for many furbearers until the renewed forest reaches an age of 30 or 40 years, although the extent of the impacts is difficult to assess without reviewing trapline returns before and after timber harvesting has taken place.

The Decision to Develop a CFMP
The conditions under which is permissible to develop a CFMP are set forth in the 2004 Forest Management Planning Manual (FMPM). The Company indicated that there was a great deal of uncertainty, and delay, associated with revised caribou habitat requirements that were (and still are) being developed and this was the key reason for the decision, partway through planning, to delay the development of the full ten-year FMP and instead develop a two-year CFMP. The audit team assessed the rationale

provided for the choice of developing a CFMP and examined whether it was consistent with FMPM direction.

Impacts of the Poor Industry Economic Conditions

The Canadian forest industry has been hit hard by the recession that began in 2008, and Ontario has seen a number of mill closures and companies entering receivership. As described above, all regional sawmills, plywood and OSB mills took significant downtime during the 2008-2010 period, but Tembec's Kapuskasing pulp mill has managed to remain open most of this time. On some Ontario forests (not the case on the GCF), the sharp decline in harvest has led to shortfalls in the Forest Renewal Trust Fund, and disrupted the renewal program. The Ministry of Natural Resources enjoined all audit teams to look carefully for evidence that the economic difficulties were leading to companies to skimp on renewal effort.

The majority of hardwood used by the forest sector in the area was for Oriented Strand Board (OSB). Most OSB mills were closed for extended periods and one well-known manufacturer went into receivership and recently sold its Englehart OSB complex to Georgia Pacific. The retreat from this part of the sector has meant that it can be difficult to find a user for the hardwood part of the allowable harvest area (AHA). Outside of some use as biomass for energy production, and the use of the veneer component, forest managers are finding themselves unable to sell the majority of the hardwood that is cut. In some cases, it is left at roadside or in the bush if the cut-to-length system is being used – besides being visually unappealing, it is effectively a waste of that part of the resource. If it is not cut, it creates difficulties for forest renewal. In short, the lack of hardwood markets creates a lot of headaches for the forest managers, and this was a primary topic of discussion during the audit.

3.4 Summary of Consultation and Input to Audit

The audit team solicited comments and opinions from the public, stakeholders, and Aboriginal organizations using a combination of mail outs to individuals and organizations on the Hearst MNR District mailing list and newspaper notices. Requests were published in three local newspapers – le Nord, le Weekender and Chapleau Express - as well as in the Aboriginally-run Wawatay News. Local Citizen Committee (LCC) members were also asked to solicit comments from the constituencies that they represented. The audit team received generous assistance from the MNR Community Liaison officer and the Native Liaison officer, in the Hearst and Kapuskasing MNR offices, respectively.

In response to these inquiries, we received two sets of comments, which is a lower than usual response level. One commenter remarked on the quantity of poplar that had been cut and left in the bush and expressed a preference for smaller cut blocks. A second respondent felt that the Forest was being managed well and sustainably. During the audit, the consultation auditor spoke with roughly half of the LCC membership and representatives from Constance Lake and Matachewan First Nations.

Late in the audit process, the lead auditor met with representatives of the Moose Cree First Nation in Moose Factory. The Moose Cree feel that the audit process is not valid because it has never resulted in sufficient action on the things that are of most interest to them. The audit team empathizes with this perspective. For example, the Moose Cree oppose any harvesting within traditional traplines, especially five in particular. They also

oppose the use of herbicides in forestry and are not pleased with the implications of emerging caribou habitat management direction. This is part of the reason why participating in the audit was a low priority for them. They are also experiencing difficulties in responding to all of the demands to participate in proposed and active hydro and mining developments that are more pressing and more lucrative opportunities. Having said that they did not see fit to participate in the audit, they also felt that the audit was not adequate without their input, and their input should have been sought by providing them with background information that they could then take to the community to receive comments and have discussion. They said they would like to participate but in a meaningful way, and part of this would entail that their citizens should understand the information put forward. These discussions prompted the audit team to issue Recommendations #1 and #2, and there is a discussion in section 4.2 around efforts that the Company and MNR have taken in an effort to accommodate their concerns around trapline impacts. The desire of the Moose Cree to eliminate herbicide use would have huge impacts on forestry since the renewal of conifer, particularly on upland sites, would be greatly reduced – no recommendation was provided since there appears to be little basis for alleviating this concern, especially since Tembec is already committed to minimizing herbicide use on the Forest in order to remain certified under the Forest Stewardship Council.

4.0 AUDIT FINDINGS

4.1 COMMITMENT

Because the Gordon Cosens Forest is certified to the Forest Stewardship Council national boreal standard, this principle is considered to have been met and was not assessed during this IFA. The audit team was impressed with the dedication and commitment of both Company and MNR staff.

4.2 PUBLIC CONSULTATION AND ABORIGINAL INVOLVEMENT

The Local Citizens Committee was revamped in 2006 and new terms of reference developed. The revised LCC contained an identified core membership, however LCC meetings remained open to other members of the public who wished to participate. During the audit period, the LCC was active, meeting an average of ten times per year, and organizing meetings with other regional LCCs, an event with First Nations, and public outreach (open houses). The LCC representative on the planning team was a regular participant at planning team meetings. It should be noted that there is a high rate of attendance of a core group of LCC members. Meetings are advertised and open to the public.

The LCC has been well supported by both MNR and the Company. The MNR community liaison position is very active supporting the LCC and the MNR District Manager is an occasional LCC meeting attendee. The auditors interviewed 5 LCC members who were satisfied with the level of support they got from MNR, and reported a very good relationship with Tembec. Experts were brought in when necessary and events were organized regularly that focussed on a particular "key" issue (e.g. management of caribou habitat).

A reasonably wide range of membership is present, with the notable exception of resource-based tourism outfitters. We observed that many of the issues brought forward for plan amendments originated from stakeholder groups not represented on the LCC, most notably the resource-based tourism operators (RBT's) and outfitters. Efforts to find RBT /outfitter representation were not successful during the audit period[2].

For the nine Aboriginal communities with an interest in the Gordon Cosens Forest, all notifications related to planning, including the AWS inspection and herbicide application notices were found to be in place and issued according to the FMPM timelines.

Of the nine communities, the Moose Cree and Constance Lake First Nations were most involved in forest planning. Each community had two members on the planning team for the 2010 CFMP. One of the Constance Lake representatives expressed a general level of satisfaction with the functioning of the planning team. The Moose Cree said that they participated in plan development because it was the only avenue open to them to have an influence in how the Forest was managed, and at the same time they felt that their concerns were not taken seriously because they felt that the planning team response was insufficient.

The audit team felt that MNR and Tembec employed best efforts in engaging with the Moose Cree and Constance Lake First Nations, and we observed that the interrelationships are generally strong in the sense that the parties can have dialogue on matters of concern and make progress towards resolution. Sometimes the progress is slow and there remain substantive disagreements but the parties are able to continue to talk. The MNR pointed out that although attempts were made, there was very little Aboriginal participation in the development of the 2005 FMP, and that the relationships grew significantly during the audit period. Nonetheless, MNR staff said that they felt that it often seems as though the organization (MNR) is in the early stages of embarking on a very steep learning curve.

Tembec has also been active with Constance Lake and the Moose Cree. The Constance Lake community is located on the Hearst Forest, which is to the west of the Gordon Cosens Forest. Tembec is a partner in a co-existence agreement that was negotiated with Constance Lake, MNR, the industry operating on the Hearst Forest (which includes Tembec), and the federal government. The principles of the co-existence agreement apply on the Gordon Cosens Forest, as well as on Hearst Forest.

The auditors are sensitive to the concerns of the Moose Cree and other Aboriginal communities expressed above, and feel that this audit can perhaps provide some encouragement to the parties to continue to pursue efforts to mitigate the negative impacts of harvesting on traplines. The current approach is not working satisfactorily; accordingly, Recommendations #1 and #2 have been issued (see Appendix 1 for a fuller discussion).

4.3 Forest Management Planning

Development of 2010 Contingency FMP

[2] Since the audit, a local remote tourism outfitter representative has joined the Kapuskasing LCC.

The development of the 2010 Forest Management Plan took place within the term of the audit, and was notable for the decision by the planning team, partway through the process, to request approval from MNR to prepare a two-year CFMP, rather than the standard ten-year plan.

The primary reason for the request was that neither the province's Caribou Conservation Plan (CPP) nor the Caribou Habitat Regulation required under the Species at Risk Act were place at the time when they would have been used as a basis for determining how to manage caribou habitat. Since roughly one-third of the Gordon Cosens Forest is within the zone of continuous habitat occupancy, the argument was made that waiting for the regulations to be released would lead to the development of a plan with greater long term validity, rather than a plan that may need a significant overhaul once the CCP and habitat regulations were released[3]. While some of the other arguments advanced for producing a contingency plan were less convincing (e.g. debates within the Planning Team), the audit team concurs that there was ample justification for choosing to produce a CFMP.

A full and detailed proposal was prepared in the summer of 2009 after the decision to move to a CFMP. Because of the amount of work that had been done on the 2010 Plan, the CFMP is entirely consistent with it. In general this movement to a CFMP was well orchestrated.

The audit team noted that the effort made to move to spatial planning through the use of PatchWorks was a significant achievement in the fiscal environment of 2008 - 09. The use of PatchWorks enabled the planning team to model the impacts of existing spatial constraints, which aspatial models cannot deal with. One result was a meaningful reduction in the AHA from 14,709 ha (in the previous plan period) to 12,252 ha, which is a 17% reduction. The previous AHA was unrealistic in that it was generated using Ontario's standard wood supply forecasting tool (Sustainable Forest Management Model, or SFMM), which is aspatial. Spatially forecasting disturbance and harvest blocks is very uncommon in Ontario and this is an exceptional achievement that merits a best practice (See Appendix 1).

One of the most sensitive aspects of forest modelling is succession, particularly post-fire succession. The use of an outside consultant, to review the decisions of the planning team, as was done in the development of the CFMP, is a good practice. This was spurred by the use of PatchWorks which "needs non-feathered, deterministic, natural succession pathways". The result is greater confidence in the outcome that was expressed by the Modeling and Analysis Team.

Overall the plan progressed reasonably well, with the longest delay being four months for Checkpoint #4 "Support for scoping analysis." The delay grew to this length from the Base Model Checkpoint #3, reached in October of 2008. Arguably the schedule was very optimistic, since the Terms of Reference scheduled only three weeks between checkpoints #3 and #4. Scoping, the focus of planning team activity between these two checkpoints, is a significant undertaking. The scoping analysis evaluates the impact of various management considerations, one element at a time, to demonstrate the impacts of various levels of each element on plan outcomes. In the end, the scoping description took 72 pages of fairly intense analysis, summarizing 62 separate runs.

[3] Although the CCP was produced in late 2009, the habitat regulations are still not available.

Overall, the audit team felt that the 2010 CFMP was a very well-written document.

Renewal and Commercial Thinning

The CFMP introduces the Company's NEBIE silvicultural intensity hierarchy. The acronym stands for Natural disturbance, Extensive, Basic, Intensive and Elite management, and each intensity is linked to a suite of management actions and a growth and yield curve. The Company has further identified a zone where the intensive and elite management will be considered; the zone is essentially centred on the mill and accounts for access and haul distance, soil quality, and other operational factors. The Company anticipates adopting the intensive or elite management intensities on 1 – 2% of the upland harvest area. This is a very positive development and the audit team encourages the Company to continue to pursue its implementation.

The intensive and elite management intensities are projected to involve commercial thinning, and the LTMD forecasts the use of commercial thinning in the future. Commercial thinning is not widely practiced in Ontario; recently the MNR has removed some key obstacles to the practice. Furthermore, MNR is reviewing its designation of commercial thinning as a "Not Recommended" silvicultural practice. Commercial thinning is undertaken throughout the world on a wide range of species and the audit team encourages the province to complete its review in a timely manner and find the process to be acceptable in the boreal forest.

Fire Cycle

We reviewed the discussions that occurred during model development. Particularly controversial was the role of the fire cycle in setting the natural benchmark. Fire cycles are used in FMP modeling to estimate the amount of land affected by fire over time, and therefore not available for harvesting. It is fair to say all of the available information was brought to bear. Assessing a fire cycle for eco-district 3E-1 was difficult due to the structure of the Forest Resource Inventory (FRI), which does not give accurate time-since-fire calculations. Based on advice from the MNR's North East Science and Information (NESI) unit, pre-suppression fire cycles for various forest units were set between 110 – 300 years, and the post-suppression fire cycle was estimated at 7,192 years for the Forest as a whole. The pre-suppression fire cycles were estimated based on data from approximately 1920 to 1972, while post-1972 data was used to estimate fire cycles under effective fire suppression. Given that the post-suppression fire cycle has an impact on the determination of the AHA, it is important to have a reasonable estimate. Methodologically, the approach mandated by Regional MNR and used by the planning team is rational, however, the audit team has two concerns with it: 1) the sample size (i.e. no. of years) used to estimate the post-suppression fire cycle is very short, leading to a questionable result and 2) disturbances other than fire also affect the Forest and should be taken into account by a comparable means. Recommendation # 5 addresses these concerns (see Appendix #1 for more details).

Areas of Concern

The 2010 CFMP contains prescriptions for 37 different types of AOCs; there were slightly fewer types of AOCs in the 2005 FMP. The increased number in 2010 is indicative of the evolving approach to forest management in which greater specificity and recognition of the need for treatment of specific types of values is employed. The audit team reviewed the prescriptions for all AOC types and found them appropriate for the values they are intended to protect.

Access and Tourism
The effects of new access on RBT operations has been a long-running issue on this forest, centred in the southern part of the Forest which is in MNR's Chapleau District. The density of RBT operations there is higher than in other parts of the Forest and requires considerable attention to balance the needs of the forest and tourism industries. A key challenge is the maintenance of remoteness for remote tourism operations. The requirement to provide remoteness is identified in the Crown Land Use Atlas policy on General Land Use Areas in Chapleau (policy report G1770). However, partly because the direction is rather vague and no operational definition of "remote quality" is provided, the application of the direction in the policy has been inconsistent. This issue is addressed in Recommendation #3 (see Appendix #1).

Another contentious issue concerns the bridge across the Groundhog River, which was built in the early 1990's and was intended to be temporary. The decking and superstructure were removed in 2001 however the cement piers still remain; while under Ontario's Living Legacy, in 1999, a significant length of the Groundhog River, including the crossing location, was named as a provincial waterway park. The Beardmore Access Strategy, in the 2005 FMP, states that "following the next crossing, entire bridge including piers and abutments to be removed" and that an "MOU or tenure document [should be developed] to address specifics of leaving substructure in place". This has not been done and, given the context of the bridge, the audit team feels this is something that should be undertaken to be sure that the original intent of having the bridge as a temporary crossing is maintained. Recommendation #4 addresses this concern (see Appendix #1).

Wildlife Habitat and Old Growth
In the 2005 FMP, the approach used to identify target levels for wildlife habitat on the Forest was based on the minimum amount forecast to be present at any future time during a baseline "no management" scenario. For each of the selected wildlife species, the minimum amount deemed to be acceptable was to be within 20% of the minimum level forecast in the baseline scenario. The approach for setting wildlife habitat targets was modified in the 2010 CFMP so that the target amounts for each selected wildlife species were required to track the baseline scenario over time, with the goal being achievement of at least 70% of the Natural Benchmark run in every term. The audit team believes this is a superior approach as it tracks the model's predictions.

In an analysis of the two approaches, the audit team found that the revised method provided more habitat over time for six of the seven selected wildlife species, than did the previous method used in the 2005 FMP. Our analysis was corroborated by a separate analysis provided by Tembec. Target amounts of old growth forest were identified in a manner comparable to the wildlife habitat targets described above. Similarly, the target amounts of old growth forest were projected to be higher under the method used for the 2010 CFMP than they were in the 2005 FMP.

Caribou
Stewardship of caribou and their habitat is a very topical issue in the management of Ontario's boreal forest. The MNR recently released its Caribou Conservation Plan[4], which is intended to be a science-based long-term strategy for "recovering Ontario's

[4] Ontario Ministry of Natural Resources. 2009. Ontario's Woodland Caribou Conservation Plan. 24 p.

Woodland Caribou". Much of the document deals with the integration of forest management and caribou habitat management. A companion piece of key direction is the Habitat Regulations, required under the Species at Risk Act, which will identify the areas within which the direction of the CCP must be applied. As indicated above, the delay in the production of the CCP and Habitat Regulations was the primary reason advanced for developing a contingency plan.

The CCP is now available and is being used, along with input from MNR scientists, to provide direction for the development of a revised long-term management strategy for the Forest. The Habitat Regulations are not expected to be released until 2013. It may be necessary to re-plan to some extent at the 5-year point in the plan to ensure that all direction from the Habitat Regulations is taken into account.

4.4 Plan Assessment and Implementation

Harvest

During 2005/06 and 2006/07, the annual harvest area was 81% and 74%, respectively, of the average annual planned harvest level. In the following three years, however, harvest area plummeted so that over the full audit period, just less than 50% of the planned area was actually harvested. During this period, the total volume harvested was 64% of planned volume for spruce, pine and fir, and 34% for hardwoods. Part of this shortfall was due to areas that were bypassed. That is to say, they were planned for harvest based on standing inventory estimates, but actual volumes on site proved to be insufficient to support economically viable operations.

The main cause of the reduced harvest levels was the difficult economic conditions and the resulting reduced mill consumption demands in the region during the audit period. The hardwood harvest was particularly impacted, by the disappearance of markets for OSB poplar, which complicated harvest operations for veneer poplar and softwood in mixed wood sites. As a result, considerable residual poplar had been cut, hauled and left at road side. The Company secured permission to use some of this material as part of a biomass harvest initiative. Nonetheless, there is a significant amount of wood fibre that has not been utilized over this term, although we saw only one site with very high levels of leftover poplar by the roadside. Long term solutions to this issue include both economic and institutional improvements – a more robust North American economy and a greater demand for biomass coupled with a province wide effort by the government to seek new users of available timber supplies and overhaul the tenure system. Because the institutional changes are well under way and Tembec is looking for opportunities to merchandise OSB poplar, and because the audit team feels it is appropriate to maintain the veneer users at the short-term expense of the OSB portion of the harvest, no recommendation was made.

The audit team has issued two recommendations related to slash management however, which has been a long-running concern on this and many other Ontario forests. For a while, it was hoped that the development of markets for bioenergy feedstock would create sufficient demand for slash to reduce the scope of the problem, but the relative competitiveness of slash versus other sources of biofibre is quite variable. Operational trials at Tembec over the last 3 years have also flagged significant challenges related to elevated moisture content with in-bush biofibre recovery. This issue is compounded on the GCF where much of the access to harvest areas is winter-only. This awareness has recently curbed expectations over the extent to which

bioenergy will consume substantial amounts of slash. The Company has done considerable work to manage slash more effectively, however Recommendation #6 has been issued to encourage the Company to be more aggressive. Recommendation #7 asks MNR and the Company to explore options to modify the application of prescribed burning regulations on the Forest to the lower the cost of slash burning (see Appendix #1 for a discussion of these two recommendations). The Company stated that the Forest is cooler and wetter than the regional norm, suggesting an opportunity to develop an outcome acceptable to both parties.

The auditors inspected approximately 100 harvest sites. Harvests operations were well designed and implemented. AOC compliance was very high, site disturbance was very low, despite challenging ground conditions, and the Company's attention to residual stand structure was good. Although the harvest system used on this Forest is nearly exclusively clearcut, the use of internal and peninsular residual patches, (which averaged 15% of harvested area) together with individual leave trees left a renewing forest with excellent structural diversity. The policy of leaving individual white pine and black ash in harvest areas was evident in the field and is commendable.

Some stands continue to be harvested in two-passes, with the first pass generally removing the conifer component and the second removing the poplar veneer. Two-pass harvesting can impede silviculture when the second pass is delayed for several years or foregone entirely, and it inevitably would seem to be more expensive than single-pass harvesting, so it is generally not a desirable approach. On the Gordon Cosens Forest, single-pass harvesting was tried for about a year, but in poplar dominated stands, two-pass cutting has resumed. Columbia Forest Products feels that its crews obtain higher yields of veneer, due to their experience in selecting and cutting veneer, than other crews and so Columbia and Tembec have agreed to continue using a two-pass approach. Tembec has done well to ensure that the second-pass is usually completed during the same year as the first, which minimizes any negative impacts on renewal. Because the audit team has confidence that stands awaiting a second pass are not forgotten and the silvicultural impacts are insignificant, no recommendation is issued.

The Company conducted a trial harvest on one block as part of a project led by the Forest Research Partnership (FRP) with assistance by Tembec, MNR and the Canadian Forest Service. The goal of this project, known as the *Enhanced Forest Productivity Pilot Project,* is to maximize the productivity of carefully selected "prime" sites in northeastern Ontario, by merging leading-edge forest modeling, silvicultural science and operational practices. The spatial distribution of residual trees was modified and biofibre was derived from the site, resulting in a considerably higher harvest volume than would have resulted under a normal harvest. Markets were found for softwood, either as sawlogs, pulp, or other specialty products and for hardwood, either as veneer or biomass. It was a good effort to test a more complete product utilization strategy and is a good illustration that the Company has been making efforts to improve both harvest and management practices.

Renewal

The renewal program was effectively implemented. Company staff have an excellent understanding of the reaction of the ecosystems on this Forest to harvest disturbance and have developed efficient techniques for ensuring the predicted forest type is returned to the land base. The Company has trended towards using chemical in place of mechanical site preparation techniques. There has been a significant effort to

improve the efficiency of planting and tending efforts. The increase of residual structure has resulted in the development of approaches to deal with smaller renewal treatment units within larger harvest blocks. One of the results has been an overall reduction in the use of herbicides, in spite of increased use of herbicides for site preparation.

The Company continues to work to improve the suitability of its renewal activities to meet ecological and silvicultural objectives. A mulching trial, using a mechanical site preparation machine was conducted in 2005, in an effort to develop more tools for bringing conifer back on mixed wood sites. A herbicide stripping trial was conducted to target the same objective.

The audit team visited some sites that are planned for intensive or elite management under the Company's NEBIE system, however the renewal was at an early stage and it is not clear what management intensity will be. Tree improvement efforts have been on target. The Company has annually conducted or coordinated activities such as cone collection and is planting stock from the tree improvement program on upland sites.

Free-to-Grow Assessment
The audit team inspected 10 FTG sites on the ground and 104 sites through an aerial survey. On several mixed wood sites, the auditor was unable to verify the forest unit boundaries because the stand boundaries were indistinct. One other FTG block was clearly mistyped. The map summary indicted a Mixedwood forest type, but the forest on the ground was spruce. On other sites visited the site attributes observed were consistent with those described in documentation. The audit team concluded overall that the FTG program has been effectively implemented.

Areas of Concern
The audit team inspected approximately 45 AOCs during the course of the audit, primarily by aerial reconnaissance. We found no violations of prescriptions. Further inspection of compliance records showed no significant infractions or systemic issues.

Access
The 2005 FMP included plans to construct 63 km of primary road and 38 km of secondary (branch) road. Over the course of the audit period, only 32% of the planned length of primary and secondary road construction occurred. The shortfall is directly related to the broad slowdown which resulted in decreased demand for forest products.

The Company was able to make appropriate use of funding available through the provincial roads program. Most of the Company's efforts were related to road up-grades and improving/upgrading existing crossings. The audit team inspected five bridges which were up-graded during the audit period and found all to be in good repair. In addition the audit team travelled on approximately 60% of the length of newly-constructed roads and found them to be well-constructed.

In general the quality of roads on the Forest was good. However, some issues related to road construction and maintenance require attention. Although the Company has made good efforts to improve the quality of many crossings on the Forest, a number of derelict bridges remain. Recommendation #8 (see Appendix #1) addresses this issue.

On much of the Forest there is limited availability of ideal road-building material (i.e. gravel). Access development in Ontario's Clay Belt, which is dominated by fine silt soils,

is challenging and requires extra care (and often extra expense) to avoid erosion and road degradation. During the audit site inspection, one particularly poor instance of road construction was observed. In addition, poor grading practices were observed in a number of instances. These are dealt with in Recommendation #9 (see Appendix #1).

4.5 System Support

Because the Gordon Cosens Forest is certified to the Forest Stewardship Council national boreal standard, the Human Resources component of this principle is considered to have been met and was not assessed during this IFA. However, the IFA did consider the Company and MNR document control systems. Overall, the audit team found that document control processes used by the Company were sound and enabled the Company to manage its documentation effectively. MNR's document control processes were a little more variable, but functioned well overall. The audit team did encounter some issues due to some of the LCC membership information being outdated, but this did not affect the functioning of the LCC as all parties have everyone's contact information.

4.6 Monitoring

Annual Reports

There are five annual reports (ARs) which cover the audit period (2005/06 – 2009/10). The 2009/10 AR is not due during the audit window and only a draft of the report was provided to the audit team, so it has only been reviewed cursorily. In general the reports were of good quality, containing all the required sections/discussions and submitted on time. The text of the annual reports was sufficiently detailed so as to provide good explanations of the annual operations on the Forest. Tables were completed accurately, with the exception of one error noted by the audit team. The MNR provided comments on all the ARs during the audit term. For most of the ARs, only a few comments were provided, reflecting the good quality of the initial submission. The Company attended appropriately to the MNR's comments.

Silvicultural Monitoring

There was some room for improvement in silvicultural monitoring. Operational efforts were effective, as the Company's FTG program is being maintained as prescribed. Success rates are averaging over 90% and the Company has been diligent at continuing to monitor sites that have not been declared successfully renewed.

The Silvicultural Effectiveness Monitoring (SEM) program conducted by MNR has not been sufficiently developed or consistently implemented. The 2009/10 program sampled less than 1% of the regenerated area, and the survey techniques were such that results could not be usefully compared to the work conducted by the Company. The audit team believes that this program should be reviewed, in conjunction with the Company program, and the expected information generated from the pending digital inventory, to ensure that it provides an effective check on the response of the forest to silvicultural treatments. This is the subject of Recommendation #10, which is more fully described in Appendix #1.

Compliance Inspections

The intensity of the operations inspection effort is consistent with other Forests in the province. The level of non-compliance is modest and there is no need for a larger

compliance effort. Forest Operations Inspection Program (FOIP) reports are filed and available for review online (internally). The managers follow the MNR protocol for FOIP and they use their Management System as a supporting documentation system, and means of addressing issues.

The only issue detected during the audit was the SFL manager's choice not to put photos of compliance issues into FOIP reports, which Company staff justified by stating that they have a concern that pictures can be misleading. There were no examples provided of abuse. MNR staff indicated that photos and other documentation are made available in hardcopy when requested, while some expressed the opinion that this action likely has additional cost, and opens the Company up to suspicion of hiding things. We suggest that this policy be reconsidered.

4.7 Achievement of Management Objectives & Sustainability

The audit team reviewed the suite of objectives and targets that were contained in the 2005 FMP, and the extent to which they were achieved during the audit period. The detailed assessment can be found in Appendix 2. We note that many of the objectives from that plan were carried over to the 2010 CFMP, either with minor changes or with no changes at all. The Company prepared a good set of objectives for the 2005 FMP, many of which were relatively specific and therefore amenable to assessment. All had targets associated with them, which were often quantitative or measurable, which is helpful to a wide range of people, including the forest manager.

The 2005 FMP had ten forest diversity objectives, of which half were related to characteristics of the FMP and were achieved during the development of the plan, assuming that operations followed the plan. These objectives were related to forest species type composition, amount of old forest retained, provision of marten cores and other aspects of habitat. Many but not all of the habitat targets in the plan were met. Table AR-14 from the draft 2010 Annual Report shows that the target was projected not to be met for woodland caribou as well as black bear (foraging habitat), deer mouse, and snowshoe hare in either the medium term (20 years) or long term. For caribou, the direction provided through the Caribou Conservation Plan is "resetting" the manner in which habitat is defined and managed, and bringing it to a higher level of importance than in previous plans. For the other species, the differences between the target and projected achievement are very small, and well within the expected amounts likely to be present on the Forest. Therefore, although the targets are not projected to be met for all species, the audit team does not find cause for concern.

There were four objectives related to patch size distribution on the Forest and residual structure in harvest areas. The Company met its residual material targets, according to our field inspections and discussions with Company and MNR staff. There was a fairly important revision to the template of target disturbance size frequencies between the 2005 FMP and the 2010 CFMP, which made it difficult to assess the impact of the Company's activities during the audit period, although the Company did make progress towards the 2005 template.

The FMP contained a series of six socio-economic objectives and three renewal objectives. The achievement of quantitative targets associated with these objectives was impacted by the recession and downturn in harvest activity. Nonetheless, the Company operated within the direction incorporated in the plan, and carried out a full renewal

program that included a great deal of FTG assessment (100,000 ha during the audit period). With roughly half of the projected harvest actually cut, the activity pressure on the resource was less than it would have been under full operations. The audit team notes that the harvest was relatively higher in the conifer dominated forest units and much lower than planned in the hardwood dominated forest units. The veneer users were able to operate fairly regularly during the audit period, which created challenges in terms of allocating stands to minimize the amount of OSB material associated with the veneer harvest. The Company did quite well, with only one site viewed by the auditors having considerable leftover poplar at roadside. The audit team is of the opinion that the planned changes to the tenure system that are expected be introduced by the provincial government in early 2011, and the wood supply competition that is under way, will lead in the mid to long-term to an increased demand for wood that might well include the OSB poplar on the Gordon Cosens Forest. Since these two initiatives are under way, there is no recommendation. In the interim, the audit team encourages the Company to consider the full set of costs and benefits associated with leaving the fibre at roadside (e.g. the cost associated with the loss of productive land by the roadside and opportunities to increase the benefits of using the fibre for bioenergy by exploring opportunities to generate carbon offset credits).

An ongoing sustainability challenge relates to access and the remote tourism sector, which is primarily concentrated in the south end of the Forest. The Company is now becoming more active in areas close to remote tourism facilities, and the road access and other characteristics associated with operations (e.g. machine noise) could pose a risk to the ability of the outfitters to offer a remote experience. While the 2005 and 2010 FMPs have a number of AOCs specifically designed for remote situations, there is a small segment of society that feels it has the right to ignore access restrictions, and sometimes mistakes are made in the timing of operations. We found that the Company was very proactive in working with RBT's and generally able to develop acceptable outcomes, however we have recommended that the land use planning direction be clarified to match the policy intent for these areas (Recommendation #3 in Appendix #1). The audit team observed that the Company met the targets associated with the objective of maintaining the viability of the trapping industry, but the objective did not account for the local impacts of timber harvesting on individual trappers. As a result, the Moose Cree indicated a high level of dissatisfaction with the impacts of timber harvesting on trappers, leading to Recommendations #1 and #2.

The audit team was very impressed by the overall quality of the relationships between many of the stakeholders on the Forest and the Company and MNR and engaged First Nations, and between the principles parties themselves. The experience of the staff is another major advantage. In the field, these qualities were readily apparent, and the overall impression created was that the renewal program is adequate to replace what is harvested. The Trend Analysis (Appendix #7) reports that the Company renewed an area equivalent to 181% of the area harvested between 1985-1990 (this reflects the large areas depleted by spruce budworm and fire in the 1970's that were assessed and declared free-to-grow during 1985-1990), 95% of the area harvested between 1990-1995, and 96% of the area harvested during the first years of the 1995-2000 period. In the two most recent periods, the majority of the 4-5% of area not regenerated was used for roads and landings.

The audit team's confidence in the sustainability of management was enhanced by the high rate of compliance on operations, as discussed in Section 6. The good rapport between MNR and the Company was another positive indicator.

Based on the foregoing, the audit team concludes that the Gordon Cosens Forest was managed sustainably during the audit period.

4.8 Contractual Obligations

The contractual obligations reviewed in this section are the requirements listed in the SFL. (A detailed account of the achievement of SFL obligations can be found in Appendix 3.) The Company was up to date with the achievement of its contractual obligations. The Company was current with its payments to the Crown, and had complied with requirements to produce various planning documents and activity reports. The Company also prepared a suitable set of compliance plans and ran an effective compliance program during the audit period. The level of compliance inspections undertaken declined during the last three years of the audit period due to a sharp decline in harvest levels, however the rate of non-compliance incidents remained low on the Forest throughout the audit period.

The Company and overlapping licensees were considered by the MNR and the audit team to not have committed any wasteful practices, although the collapse of the OSB-grade poplar market has meant that considerable amounts of unused OSB poplar is lying at roadside, as discussed in Section 4.4.

Similarly, the volumes that have been delivered to commitment holder mills have generally been well below the numerical quantities listed in the SFL, especially in 2007/08 and more recently. Despite the economic stresses of the last several years, the Company maintained silvicultural standards at a high level and there was a great deal of free-to-grow assessment undertaken (approx 100,000 ha) during the audit period. One relatively minor item that nevertheless produced a disproportionate level of discord was a special condition for the SFL-holder to make available up to 2,000 m^3 of aspen sawlogs/year to Cayouette Cabinets. The controversy arises because there is little difference in the quality specifications between aspen veneer and sawlogs; Recommendation #11 intended to clarify the issue (see Appendix #1).

4.9 Conclusions and Licence Extension Recommendation

This audit found that the Company and MNR performed well during the audit period, keeping to the general plan direction and preparing a high-quality contingency FMP. The economic recession and the negative impacts it has had on the sector led to a reduced level of activity but neither the Company nor MNR shortchanged their responsibilities. The audit team awarded the Planning Team and the Company and MNR a best practice for the decision to use the spatial model Patchworks to develop the LTMD for the 2010 CFMP. Using Patchworks increased the planning costs and demanded more time from the Planning Team, but resulted in a superior plan. The audit team was also impressed by the good relationships between the Company, District MNR, the LCC, stakeholders and a number of First Nations.

A total of eleven corrective recommendations were issued in this audit, which is a modest number that reflects the good performance of the two auditees.

The most significant issues on the Forest are the impacts of timber harvesting on traplines, management of caribou habitat, the lack of markets for OSB poplar, which has led to that segment of the harvest sometimes being left at roadside, and the challenges of maintaining a high quality remote tourism experience juxtaposed with harvesting and renewal, and the attendant access. With respect to the latter issue, the audit team recommended that MNR lead an update of the land use direction in the Chapleau part of the Forest to reflect the priority of maintaining the functional remoteness of lakes that are used to provide a remote tourism experience. The main reason that the Company and MNR decided to produce a two-year 2010 CFMP, rather than a full ten-year FMP, was to wait for the Caribou Conservation Plan and caribou Habitat Regulations to be prepared. The audit team concurred with the decision to prepare a contingency plan. The lack of utilization of OSB poplar is related to broader economic conditions, and more specifically the closure of much of the provincial OSB production, and to provincial government policy. Changes to the tenure system and efforts to make unused timber available may improve the situation in the medium to long term, while in the short term the cause of the situation is outside of Tembec's control. Hence there is no recommendation.

The fourth major concern was identified late in the audit process when the MNR invited the lead auditor to present draft audit findings to the Moose Cree. This was the first time during that audit that the Moose Cree had discussed substantive issues. They strongly opposed timber harvesting in trapline areas, which is challenging since the entire Forest has traplines on it. The audit team encountered varying opinions regarding the extent and nature of the impacts of harvesting on traplines, and clearly those impacts are dependent on site-dependent factors. The audit team prepared a recommendation that encourages the District MNR, Company and Moose Cree to continue to examine potential approaches to improving the compatibility of timber and fur harvesting, since the current situation satisfies no one. A second recommendation is directed at Corporate MNR in recognition that the issue has broad policy dimensions.

Three additional recommendations were issued with respect to roads and water crossings. Recommendation #4 is directed towards developing more definitive use and decommissioning plans for the Groundhog River bridge and piers along the Beardmore Road, and including them in the FMP, while Recommendation #8 is aimed at mitigating safety risks due to derelict bridges. Recommendation #9 was issued to improve training related to road construction on silt soils – the audit team viewed an example of significant erosion because the construction crew had not recognized that the soil in that location was prone to erosion.

Recommendations were also issued to improve silvicultural effectiveness monitoring, and slash management. However, the silviculture program being undertaken by the Company was generally excellent and the effectiveness monitoring recommendation is related to tracking rather than poor performance. A recommendation was also issued to clear up confusion around sharing the veneer/sawlog portion of the poplar harvest. Lastly, the audit team felt that planning would be improved if a more realistic and comprehensive disturbance cycle was used in modeling.

The audit team concluded that management of the Gordon Cosens Forest was generally in compliance with legislation, regulations and policies that were in effect during the term covered by the audit, and the Forest was managed in compliance with the terms and conditions of the Sustainable Forest Licence held by Tembec. Forest sustainability is

being achieved, as assessed through the Independent Forest Audit Process and Protocol. The audit team recommends the Minister extend the term of the Sustainable Forest Licence #550039 for a further five years.

APPENDIX 1 – AUDIT FINDINGS

Best Practice # 1
Principle 3: Forest Management Planning **Criterion 3.4.1.4: Proposed Long-Term Management Direction** - To using the spatial modelling tool Patchworks as a basis for preparing the Long Term Management Direction **Procedure 3.4.1.1.3 FMP achievement of the Checkpoint "Support for Proposed Management Strategy"** ... Assess achievement of the checkpoint including by reviewing the modeling analysis used to develop the proposed management strategy, including available harvest area (AHA) and forecasted forest condition ...
Background Information and Summary of Evidence: The Company was interested in using a spatial model in conjunction with the aspatial SFMM model to develop the LTMD for the 2010 CFMP. Patchworks is a complex model that required the development separate data sets and the incorporation of spatial constraints in modeling. These spatial constraints cannot be included in a standard SFMM analysis, hence one of the limitations of using SFMM to develop the LTMD is that it overestimates the available harvest area. The use of Patchworks on the Gordon Cosens Forest was one of the first uses of the model in Ontario to assist with the development of a LTMD. SFMM was used early in the scoping process to evaluate some fairly general options, and once a basic direction was established, Patchworks was used to produce a more specific and detailed management direction.
Discussion: The use of Patchworks added considerable workload and cost to both the Company and the MNR, and the two organizations worked to together to ensure that the implementation of the spatial model was successful and that there was some cost-sharing.
Conclusion: There are considerable benefits associated with using a spatial model such as Patchworks, including a more realistic LTMD and a set of operations that are supportive of the LTMD. Despite the added complexities and time requirements, both MNR and Company staff on the planning team felt that the experience was positive and beneficial.
Best Practice: The Planning Team, Company and MNR are commended for using the spatial modelling tool Patchworks as a basis for preparing the Long Term Management Direction for the 2010 CFMP. .

Recommendation # 1
Principle 2: Public Consultation and Aboriginal Involvement **Criterion 2.5: Aboriginal Involvement in Forest Management Planning** - To examine the involvement of Aboriginal communities in forest management planning and its benefits. **Procedure 2.5.2:** " ... whether Aboriginal peoples were provided with, and whether they availed themselves, of opportunities to achieve more equal participation in the benefits provided through forest management planning and assess the results.
Background Information and Summary of Evidence: The Moose Cree have a number of traplines on the Gordon Cosens Forest, including a community trapline and traplines registered to individual community members. In addition, the Moose Cree are interested in reclaiming some of their traditional traplines, which are currently not registered to Moose Cree members. The Moose Cree, along with many other Aboriginal communities, are becoming more assertive in advocating that timber harvesting avoid trapline areas in order to prevent the negative impacts associated with harvesting. On the Gordon Cosens Forest, the issue has come to the fore in an area where there are five traplines registered to a Moose Cree family who do not wish any harvesting. The Moose Cree community is supporting them. To allow time for dialogue and to find a constructive solution, Tembec and MNR deferred harvests in these areas in 2008 and 2009 and during the term of the CFMP. However the forest in this particular area is productive and relatively close to the mill, and hence is attractive for the Company. In any event, since there are traplines throughout the Forest, the issue is much larger than these five traplines and timber harvest deferral does not represent a viable long-term solution. The SFL does not mention traplines, and the presence of traplines has not led to requirements to withdraw the trapping areas from timber harvest eligibility. However, traplines cover fairly large areas and it is very difficult for forest companies to avoid harvesting those areas at some point in the rotation. At its root, the issue is that timber harvesting and trapping essentially represent two overlapping and apparently poorly compatible tenures. One of the key questions concerns the impacts of timber harvesting on a trapper's livelihood. A range of furbearers can be trapped, some of which prefer older forest and others which inhabit riparian areas or younger forest. Marten is perhaps the most important fur species and it favours mature timber. Thus, concerns about timber harvesting on traplines are sometimes centred on the loss of marten. However, the audit team was informed that timber harvesting in the vicinity of traplines may serve to concentrate the remaining marten in unharvested patches and riparian areas, which reduces the effort required to trap them. The renewing forest also supports different types of furbearers, such as fox, although changing species may require the trapper to obtain different traps and gear. The extent of the net impact on the trapper is difficult to estimate without reviewing trapline data.
Discussion: On some forests (e.g. Waswanipi in Quebec), agreement has been reached between the First Nation and forest industry to limit the proportion of trapline area that can be harvested in any period. The Moose Cree indicated that they oppose any harvesting, but some

arrangement such as that in Quebec would be an improvement over the current situation. It is not clear how feasible such an approach would be in Ontario, since in Quebec it is underpinned by a modern 1992 Treaty. Additionally, traplines in the James Bay region of Quebec are physically different and managed differently than those on the Gordon Cosens Forest. Other potential approaches include the consideration of modified harvesting methods.
Conclusion: This issue is obviously of local importance but there are aspects of it that are more appropriately addressed on a government to government basis. Hence two recommendations have been made: this one is directed at the local manifestation of the issue. Recommendation #2 is directed towards the high-level issue. The audit team observes that the current approach is not serving either the Company or the Moose Cree and offers the following recommendation to encourage continued efforts to mitigate timber harvesting impacts on traplines in the Forest. This recommendation is written in a manner that leaves it to the parties to determine where and how to concentrate their efforts.
Recommendation: Tembec, in collaboration with the Moose Cree and MNR, will continue to seek ways of mitigating the impacts of timber harvesting operations on traplines.

Recommendation # 2
Principle 2: Public Consultation and Aboriginal Involvement **Criterion 2.5: Aboriginal Involvement in Forest Management Planning** - To examine the involvement of Aboriginal communities in forest management planning and its benefits. **Procedure 2.5.2:** " ... whether Aboriginal peoples were provided with, and whether they availed themselves, of opportunities to achieve more equal participation in the benefits provided through forest management planning and assess the results.
Background Information and Summary of Evidence: See discussion under Recommendation #1.
Discussion: See discussion under Recommendation #1.
Conclusion: This issue is obviously of local importance but there are aspects of it that are more appropriately addressed on a government to government basis. Hence two recommendations have been made: this one is directed towards the high-level issue. Recommendation #1 is directed at the local manifestation of the issue.
Recommendation: Corporate MNR will discuss with Nishnawbe-Aski Nation and the forest sector how the co-existence of timber management and trapping can be improved.

Recommendation # 3
Principle 3: Forest Management Planning **Criterion 3.5.3 Resource-Based Tourism Values- Purpose:** To determine whether resource-based tourism values have been addressed through the FMP process. **Procedure 3.5.3.1 FMP road planning:** Review the commitment to protect tourism values in the FMP process. ... Include review of whether... • the process resulted in operational prescriptions for harvest, renewal or tending or access provisions within the FMP that addresses identified tourism values, including • where remoteness was identified as a value to be protected, how the FMP has addressed maintaining a reasonably similar level of remoteness.
Background Information and Summary of Evidence: The Chapleau District portion of the Forest has a relatively high density of RBT operations, leading to concerns regarding access development, management, and the provision of remoteness as directed by the Chapleau General Mixed Use Areas Policy Report (Policy Report No. 1770). The policy requires that access to existing and new commercial tourism services be managed so as to maintain their "remote quality". However, as no operational characterization or guidance is provided defining "remote quality" there has been inconsistent provision of protection provided to remote tourism lakes and operations. In addition, the lack of a definition has led, in some circumstances, to friction between the MNR, Company and tourism operations as the search for equitable AOC prescriptions and access strategies proceeds. In addition, other parts of the policy are based largely on the 1989 Chapleau District Fisheries Management Plan, which is now viewed as being out-of-date. Some lakes which support tourism are not included in the policy.
Discussion: While all tourism-related circumstances need not have identical AOC prescriptions (the needs and geography of individual RBT operations may differ) some degree of consistency provided through a uniform characterization of remoteness should be provided. In addition, the policy should include mention of all lakes in the district which provide tourism. The inadequacy of this policy tool leaves it to the FMP to act as a surrogate for well-developed policy, placing a burden on the FMP process, for which it is not intended or well-designed. Through the absence of up-to-date policy direction, forest managers become the *de-facto* agents of land-use planning.
Conclusion: MNR, in collaboration with the forest and tourism industries, needs to update/revise the land-use policy direction related to RBTs and tourism lakes in the Chapleau portion of the Gordon Cosens Forest. MNR needs to direct sufficient resources to this task promptly as further delays will exacerbate the present situation further complicating forest management.
Recommendation: By March 31, 2012 MNR shall, incorporate consultations with the forest and tourism industries and review and update CLUPA policy G1770 to comprehensively address the present circumstances regarding remote tourism operations in the Chapleau portion of the Gordon Cosens Forest.

Recommendation # 4

Principle 3: Forest Management Planning

Criterion 3.5.8 FMP Road Planning - Direction: The FMPM provides separate direction for roads at the operational planning/ proposed operations stage of the FMP planning ....

Procedure 3.5.8.1 FMP Road Planning: Assess the effectiveness of roads planning including whether:

- planned road access is consistent with the proposed management strategy ...
- use management strategy requirements were completed and reflect the proposed management strategy where appropriate ....

Background Information and Summary of Evidence: The bridge on the Beardmore Road that crosses the Groundhog River, was built in the early 1990's and was intended to be temporary due to concerns about putting a bridge across a major river near an important sturgeon spawning area and enabling access to potential anglers. The bridge was constructed because crossing the Groundhog reduces the travel time by as much as two hours from parts of the Gordon Cosens Forest on the east side of the River, and it enables haul trucks to reach the mill without using provincial highways. The decking and superstructure were removed in 2001 after operations were completed however the cement piers remain and there is signage stating that road users may not access the Groundhog River for angling. Another key part of the context is that under Ontario's Living Legacy, in 1999, a significant length of the Groundhog River, including the crossing location, was named as a provincial waterway park. While existing crossings were grandfathered, the intent of such parks is to avoid constructing any additional crossings. The 2005 FMP indicates that the Company plans to re-deck the bridge in approximately 15-30 years to enable it to harvest some 2,000 ha of maturing timber and to conduct commercial thinning operations on parts of another 2,000 ha of young plantations. Once these operations are completed, the plan is to remove the entire bridge structure.

The Beardmore Road Access Strategy, contained in the Supplementary Documentation of the 2005 FMP, states that "following the next crossing *[i.e. the one in 15-30 years*[5]], entire bridge including piers and abutments to be removed" and that meanwhile, an "MOU or tenure document [should be developed] to address specifics of leaving substructure in place". This has not been done and, given the context of the bridge, the audit team feels this should be undertaken to be sure that the original intent of having the bridge as a temporary crossing is maintained.

The 2010 CFMP, prepared under the 2004 FMPM, identifies the Beardmore Road as an existing road with high use, one of 53 roads with this designation. The plan supplementary documentation describes a general use management strategy for all of these roads, and contains no mention or link to the use strategy in the 2005 FMP. The 2012 FMP is being prepared under the 2009 FMPM, which contains additional requirements for reporting on existing roads. Each existing road or network, and the associated use management strategy, is to be documented in Table FMP-18, however the FMPM does not indicate what level of specificity is required. The FMPM requires the SFL-holder to provide a preliminary indication of the management intent for a road when the SFL-holder plans to transfer responsibility for the road within the next 20 years.

Discussion: The audit team is concerned that given the value of the bridge in reducing haul

[5] Text in italics added for clarification by audit team.

times, and the ongoing nature of operations, when the time comes to remove the bridge there will be another strong reason for maintaining the bridge. The current agreement (in the 2005 FMP) implies that the bridge may be used as far as 30 or more years into the future, and ensuring the continuity of use strategies, liability and other relevant data is a challenge. The MNR and industry have moved away from the use of MOU's for roads strategies and are relying increasingly on the FMP, since many of the planning and funding mechanisms for roads are tied to the FMP. The 2009 FMPM, building on a review of access issues undertaken by MNR, has strengthened the FMP requirements for managing existing roads, however it is not clear how this direction will find its way into FMPs since the 2012 FMPs are the first that will be developed under this new FMPM. The audit team also understands that there is a need for flexibility in designing a road use plan since it is difficult for the Company to forecast just when it will be undertaking the future harvest and thinning operations mentioned in the 2005 FMP's road use strategy; this will limit the degree of precision that can be incorporated into a use management strategy.
Recommendation: The Company and MNR will finalize a complete use management strategy for the "temporary" segment of the Beardmore Road that includes the bridge crossing over the Groundhog River, and incorporate this into the full 2010 FMP. The use management strategy will cover all road and bridge use up to and including any planned removal of the bridge structure and cement piers.

Recommendation # 5

Principle 3: Forest Management Planning
 	
Criterion 3.4.1 Proposed Long-Term Management Direction - Purpose: To review and assess the development of the FMP long-term management direction (LTMD).
 	
Procedure 3.4.1.2.1 FMP achievement of the Checkpoint 'Support for the Base Model': Assess and report on whether the FMP modeling assumptions used are reasonable and whether they are based on the best available information. Examine:
• the methodology and assumptions used in modeling the forest
  • for the base model
  • for the natural benchmark.....
• all modeling assumptions including land base, growth and yield, fire cycle, operability, forest succession, unplanned losses, ...

Background Information and Summary of Evidence: The post-suppression fire cycle used in the CFMP is 7,192 years. This rate was calculated based on tabulation of approximately 30 years of fire data. The analysis suggests that fire losses have been curtailed by approximately 98-99% as a result of suppression. Factors other than fire also have catastrophic impacts on boreal forests. Severe spruce budworm outbreaks generally occur at about 30-40 year intervals[6]; outbreaks of other insects, (e.g. jack-pine budworm, and forest tent caterpillar) also occur periodically. Windthrow, although not a cyclic event, can also have very damaging impacts. For example, a wind storm in 2006 affected over 8,700 ha – an area equal to approximately 36 times the 'expected' area affected annually by fire according to the post-suppression fire cycle. (This windstorm represented the single largest disturbance on this forest since a large fire in the early 1940's.)
Discussion: Because the post-suppression fire cycle has an impact on the determination of the AHA, it is important to have a reasonable estimate. The process used to estimate the post-suppression fire cycle is logical, but there were two shortcomings in the analysis. First, too little data were available to rationalize the findings. Only approximately 30 years data were available (i.e. the number of years since suppression has been deemed effective). Given the magnitude of the suggested reduction in fire occurrence relative to pre-suppression, a more cautious interpretation of the analysis is warranted. Second, other disturbance factors, such as wind and insect infestations also impact the Forest. These impacts, which can be comparable to fire in terms of effects on forest management activities, should be taken into account in estimating the natural disturbance cycles.
Conclusion: MNR needs to revise the means by which projected natural disturbances are incorporated into FMP modeling. by:1) factoring wind and insect disturbances into the calculation so as to estimate a 'natural disturbance' cycle to replace the present 'fire cycle' 2) reviewing the appropriateness of the means used estimate the post-suppression fire cycle.
Recommendation: MNR Region shall provide input into FMPs which replaces the present 'post-

[6] Fleming, R.A., A.A. Hopkin, and J.-N. Candau. 2000. Insect and Disease Disturbance Regimes in Ontario's Forests. p. 141-162 in Perera, A.H., D.L. Euler, and I.D. Thompson. Ecology of a Managed Terrestrial Landscape: Patterns and Processes of Forest Landscapes in Ontario. UBC Press and Ontario Ministry of Natural Resources. Toronto. 336 p.

suppression fire cycle' with a 'disturbance cycle' which includes impacts of fire, insects, and wind damage. In calculating the fire-cycle component of the 'disturbance cycle', MNR shall use a more cautious approach to estimating the post-suppression fire cycle than is presently employed, taking into account the relative scarcity of data available for the calculation.

Recommendation # 6
Principle 4: Plan Assessment and Implementation **Criterion 4.4:** ... renewal operations outside the AOC's. Both low complexity (normally associated with slash pile burning) and high complexity prescribed burns are included. Renewal operations must be conducted in compliance with all laws and regulations including the CFSA ... **Procedure 4.4.1:** ... assess the effectiveness of operations to reduce the area of slash piles and chipping debris and treatments to regenerate these areas.
Background Information and Summary of Evidence: The management of slash on the Forest was raised as an issue in both the 2000 and 2005 IFA's and the 2010 CFMP indicates that Forest Stewardship Council (FSC) assessments and audits have also raised the issue. The concern with slash is that its presence often delays renewal of the area it occupies for a couple of decades or longer, while the slash pile decomposes. Typically this is productive area that will lag the balance of the stand by 20 – 30 years and provide much lower volumes at harvest. The 2010 CFMP estimated that 2.9% of the lowland harvest area had renewal delayed due to slash, while the analogous figure was 1.5% on uplands, and the audit team estimates that this translated into an area of 880 ha, or about 2% of the harvest area during the audit period. A slash management strategy developed by Tembec in 2007 provides preferred slash management treatments by silvicultural intensity and slash location, as well as a program to forecasting and monitoring performance. The Company has put considerable effort into this initiative and is to be commended. However, we note that in 2007 and 2008, burning was discontinued as a cost-saving measure. The Company does not manage the slash on lowland harvest blocks, since piling would require a return visit, which is infeasible.
Discussion: The audit team recognizes the considerable effort on the part of the Company to reduce the amount of land where renewal is delayed due to the presence of slash, however an estimated 880 ha, or 2% of the area harvested during the audit period, experienced delayed renewal due to the presence of slash. The audit team observes that this area is almost double the area that would have received the expensive intensive and elite levels of management during the audit period if the Company had met the target for these levels of treatment set out in the 2010 CFMP (2% of the upland harvest area).
Conclusion: The audit team believes there would be considerable benefits to the Company and the Forest if it could continue to reduce the area of delayed renewal due to slash. Considering the persistence of this issue, the audit team feels that the Company should set out quantitative performance targets in the FMP.
Recommendation: The Company shall continue to improve its slash management program and reduce the area of productive forest affected by piled slash.

Recommendation # 7
Principle 4: Plan Assessment and Implementation **Criterion 4.4:** ... renewal operations outside the AOC's. Both low complexity (normally associated with slash pile burning) and high complexity prescribed burns are included. Renewal operations must be conducted in compliance with all laws and regulations including the CFSA ... **Procedure 4.4.1:** ... assess the effectiveness of operations to reduce the area of slash piles and chipping debris and treatments to regenerate these areas.
Background Information and Summary of Evidence: The Company does not pile its slash on the Forest, due to the cost and the difficulty in accessing the considerable area of winter harvest. Provincial regulations classify the burns as low complexity burns only after October 1, and by that time it is frequently very wet in the Forest. Later burns are typically unsuccessful. As a result, the Company has identified either no slash management or piling only as the preferred options under almost all of its management regimes. Before current regulations came into place, the Company burned its slash in September, when the fire indices are higher and the burns are more effective in consuming the low-ground slash and creating suitable microsites. Under current regulations, all unpiled slash burns ignited aerially prior to October 1 are considered high-complexity burns, which require considerable fire prevention /suppression resources on site and on call, considerably raising the cost. The MNR is concerned that fires in unpiled slash are likely to spread into the cutover area; they are then declared escaped fires, which need to be suppressed.
Discussion: While the provincial government has made efforts to be more accommodating for prescribed burning, the Company contends that to obtain successful slash burns is unacceptably expensive under current regulations. The MNR feels that the conditions under which the Company would like to burn are unacceptably risky. The MNR has pointed out that there are other regional forests that have large slash pile burning programs, and do not see why the Company should behave differently on this Forest. The audit team feels that perhaps the reason why the Company and MNR do not see eye to eye on this issue is that the climate in the Gordon Cosens Forest is notably cooler and wetter than it is in other parts of the northeast, which suggests that some variation in regulatory requirements would be appropriate. The Company stated that it burned its slash for many years in September with no loss of mature timber or infrastructure, prior to the introduction of the current regulations. While the MNR is right to apply a level of caution, the audit team feels that the cooler and moister climatic conditions on the Forest justify consideration of alternate regulations on the Forest.
Recommendation: MNR and the Company shall review the appropriateness of revising the slash pile burning requirements on the GCF with the intent of providing sufficient scope for the Company to be able to institute a slash pile burning program that is affordable.

Recommendation # 8

Principle 4: Plan Assessment and Implementation
 	
Criterion 4.7 Access – Direction: Road construction, various types of water crossings, including crossing structures, road monitoring, maintenance, aggregates and any other access activities must be conducted in compliance with all laws and regulations, including the CFSA, and approved activities of the FMP and AWS....
 	
Procedure 4.7.1 Access: Review and assess in the field the implementation of approved access activities. Include the following:
• "select a representative sample of each type of access activity (road construction, various types of water crossings – winter, culverts, bridges, road maintenance, decommissioning) from primary, secondary/branch roads ...."
• determine whether the operations implemented were consistent with....
  • conditions on construction, including the approved crossings structure...
  • use management (maintenance, access control, any decommissioning provisions..."

Background Information and Summary of Evidence: During the course of the site inspection, the audit team noted that several derelict bridges exist on the Forest. The bridges included those in place on road SH-12 in Shackelton township, and on road CSR 6 in Radisson township. Other bridges on the Forest are also in states of disrepair.
Discussion: MNR staff informed the audit team that "about' 12 bridges for which the MNR has responsibility are in such a state as to likely be deemed unsafe by engineers and another 14 for which the SFL has responsibility are in comparable states of disrepair. The bridges present both a potential safety hazard to vehicles using them and an ecological hazard to the waterways which they span.
Conclusion: The bridges need either to be fixed so that they do not present safety and ecological hazards, or removed so that the potential for damage is eliminated.
Recommendation: The MNR and the Company shall identify all bridges on the Forest which are in states of disrepair. In consultation with other relevant parties (i.e. road user-groups and other industries), the MNR and the Company shall identify and implement action plans for removing, repairing, or replacing the bridges as appropriate.

Recommendation # 9

Principle 4: Plan Assessment and Implementation

Criterion 4.7 Access – Direction: Road construction, various types of water crossings, including crossing structures, road monitoring, maintenance, aggregates and any other access activities must be conducted in compliance with all laws and regulations, including the CFSA, and approved activates of the FMP, and AWS....

Procedure 4.7.1 Access: Review and assess in the field the implementation of approved access activities. Include the following:

- "select a representative sample of each type of access activity (road construction, various types of water crossings – winter, culverts, bridges, road maintenance, decommissioning) from primary, secondary/branch roads ...."
- determine whether the operations implemented were consistent with....
- conditions on construction, including the approved crossings structure...
- use management (maintenance, access control, any decommissioning provisions..."

Background Information and Summary of Evidence: During the audit site inspection one particularly substandard stretch of road was inspected. In Wadsworth Township an access road was developed up a steep slope, and was improperly capped with coarse material. Significant erosion occurred, fouling a creek and the surrounding forest. This incident was already known by the MNR and Company and remediation had occurred. Also during the site inspection, the audit team noted that several bridges had a build-up of gravel on the surface. The accumulation of road material can cause damage to the bridge surface and deposition of road material into the waterways underneath.

Figure 3. Bridge surface with significant build-up of road material.

Discussion: The audit team believes that both types of incidents described above are the result of insufficient or inadequate training of road construction and maintenance crews, respectively. The Company is responsible for the activities of its employees and contractors; Overlapping Licence Holders are also involved in road construction and management, and they do not operate under the supervision of the Company.

Conclusion: Road building and maintenance on the Gordon Cosens Forest is particularly challenging, largely due to the poor road-building materials available. Training is particularly important in these circumstances to avoid deleterious impacts.

Recommendation: The Company shall ensure that employees and contractors responsible for road construction and maintenance are adequately trained to avoid circumstances which can lead to deleterious environmental impacts. The MNR shall provide oversight of the training provided to staff and contractors of Overlapping Licence Holders.

Recommendation # 10
Principle 6. Monitoring **Criterion 6.3 Silvicultural Standards Assessment Program** **Procedure 6.3.3.** Assess whether the SFL/Management unit assessment program is sufficient and is being used to provide the required silvicultural effectiveness monitoring information...
Background Information and Summary of Evidence: The MNR's SEM program is not performing consistently. A draft project plan was completed in 2007. The auditor reviewed summarized field sheets from 24 of the sites that have been inspected by MNR. All of the sites were accessible by road, a practical consideration given a limited budget, but the result is that few low land sites, which constitute most of the operational area on this forest, have been assessed. Two of the sites assessed by MNR did not meet the well spaced free growing guidelines, according to the MNR assessment, in contradiction to the findings of the Company's assessment. On average, the results showed the Company and MNR results had similar conclusions on stocking of the stands. The Company data indicated average overall stocking was 70% and MNR data indicated the average overall stocking was 74%. Stocking estimates by MNR were more than 10% different from the Company's assessment 7 out of 24 times, and of those, MNR identified a higher percentage stocked area on five sites. There was a more significant difference in what each agency identified as percentage species composition. Using the percentage of black spruce identified in the species composition assessments as an indicator, the Company identified, on average, that black spruce made up 59% the stocked species whereas MNR identified, on average, that black spruce made up only 30% of the stocked species. MNR completed assessments on 200 ha out of the 20,000 ha FTG program the Company conducted during 2009/2010, which constituted a 1% sample. It was clear that the survey techniques used by the two parties were different. The Company conducted aerial FTG surveys that largely focused on stocking and potential crop trees. MNR's program was a plot based ground survey that included all species in the stand description. Given the basic difference in survey approach, it is not surprising that the results were also different. Interviews confirmed the MNR effort on SEM monitoring has been inconsistent. MNR indicated that the SEM program was in place through two of the five years in the audit period, and the sample taken in those two years was very small. Both of these programs may become redundant, or at least less useful, when the new digital inventory has been completed (the imagery was completed in 2008 but interpretation has yet to start). The inventory should be able to provide a more comprehensive assessment of the state of the Forest, in terms of stocking and species composition. If this inventory is to be repeated on a

10 year cycle, as is currently promised, it may be sensible for the Company to reduce the effort of FTG assessments, in exchange for the Company and MNR developing an integrated approach to assessing effectiveness of the silvicultural program.
Conclusion: The auditors conclude that the SEM program on the GCF is not adequate as currently implemented.
Recommendation: The District MNR and Company shall review the objectives of the Silvicultural Effectiveness Monitoring program, and develop an integrated approach that optimizes the effort required to meet those objectives. The approach should consider the Company's FTG program, the District SEM program and the Forest Resource Inventory as sources of information that could be used to design and implement the optimized SEM program.

Recommendation # 11
Principle 8: Contractual obligations **Criterion 8.1.2:** SFL Wood supply commitments, MOAs, sharing arrangements, special conditions **Procedure 8.1.2.1:** Determine whether wood supply commitments and any special conditions have been complied with ...
Background Information and Summary of Evidence: Appendix F of the SFL contains a special condition that requires the Company to make available to Cayouette Cabinets timber that includes a target volume of 2,000 m^3/yr of aspen sawlogs for use in Cayouette's mill. In addition, the SFL contains commitments to Norbord and Levesque (Columbia) for poplar veneer, and the volumes produced in the Forest are insufficient to meet the target volumes in those commitments. The Company demonstrated that the quality specifications for an aspen sawlog are essentially the same as those for veneer (both the Company and the provincial wood measurement supervisor agree on this point) and so Tembec finds itself caught between veneer users who feel they have the right to the veneer harvest, and the sawlog user who wants the volume specified in the licence condition.
Discussion: There was considerable confusion regarding the status of the licence condition at the time of the audit. The provincial government had taken the volumes in the condition and included them in the wood supply that was up for competitive bid – at the time of writing the results of the bidding had not been released. If there is no award, it is unclear what will happen to the volume. The province was also in the process of adjusting the SFL to reflect these changes but the operative version of the licence retains the condition. Meanwhile, while the province was aware that Cayouette had sold his processing equipment and thus did not appear to be in a position to act on the condition. However, the purchaser has apparently expressed an interest in the condition however he had not applied to the government to have it transferred. Company staff indicated that they had been approached within the last 12 months regarding the aspen sawlog volumes in the condition.
Conclusion: The root causes of this issue are the almost complete overlap between the veneer and sawlog components of the aspen harvest, and the inability of the Forest to provide the amounts that have been committed. The status of the special condition and the availability of the wood identified in the condition are in flux and it is unclear whether the condition will be extinguished. At present, the condition remains in the SFL and there is potential for it to continue to cause friction. While the initiatives in motion may result in the elimination of the issue, we cannot be sure and hence have provided a recommendation.
Recommendation: MNR should work with the Ministry of Northern Development, Mines and Forestry and the SFL-holder develop a set of unambiguous and achievable commitments for the veneer/sawlog grade portion of the aspen harvest.

APPENDIX 2 – ACHIEVEMENT OF MANAGEMENT OBJECTIVES

Table A2.1. Achievement of 2005 FMP Objectives.

Objective & Target/Indicator	Auditor Assessment & Comments
Forest Diversity	
A1: To maintain all major boreal forest types (forest units) that are currently found within the landscape. Target: Area must stay within +/- 50% of 2005 areas.	Table FMP 11 in the 2005 FMP (the version for the balanced alternative that become the long-term management direction) showed that over the period 2005 – 2105, the area of the forest units remained within +/- 50% of the 2005 area (Crown productive managed forest available for timber production) with the exception of the white birch FU, in which the area was projected to reach 8593 ha in 2105, a decline of 50.1% from the 2005 area of 17,232 ha. However, in the 2010 CFMP, the projections for the birch forest unit show that it will be essentially unchanged over the next 100 years. Accordingly, this objective is considered to have been met to date.
A-2: Maintain an overall forest age class structure in a manner similar to a fire origin forest. Target: Maintain at least 15% of each forest unit in mature/overmature state and 5% in an overmature state (managed and unmanaged forest).	SFMM predictions from 2005 FMP indicate targets will be met by 2105. In addition, FMP-4 from 2010 CFMP indicates targets are met with present forest, and FMP-7 indicates targets will be met in 2110. Target is met
A-3: To maintain a range of harvest patch sizes across the landscape that follows the same tendencies as the frequency distribution of patch sizes created by natural disturbance (i.e. wildfire). Target: To create a forest with a semi-random pattern of patches of varying vegetation and	Both the 2005 FMP and the 2010 CFMP show that the current distribution of area by patch size is relatively close to the target, which is the average of the CNFER analysis and the fire patch size analysis done on the clay belt portion of the GCF in 1995. In the 2005 FMP, the main deficiency was in the 521 – 1040 ha size class, where the target was 34% and the actual was 27%. In the 2010 FMP, the target was 33% and the actual was 30%. There was considerable variation in the % frequency figures. In the 2005 FMP, the targets for the 261-520, 521-1040, 1041-5000 and >5000 ha classes were 39, 26,

successional stages. Patch size targets shown in Tables 11-13 of the FMP.	24 and 11% while in the 2010 CFMP the targets were 20, 15, 21 and 8%. Based on the percentage area analysis, there was progress in moving towards the target distributions, but the change in both the frequency targets and the assessment of current frequency prevents the audit team from being able to undertake an adequate assessment.
A-4: Ensure that the harvest patches are spatially separated in a manner similar to disturbance patches in the fire origin forest. Target: Separate harvest patches from each other by unharvested patches. New harvest patches should not abut older harvest patches until the forest on the older patch is at 3 m high or 20 years, whichever occur first.	The rules for determining the size of a clearcut address the minimum separation between two patches required for the patches to be considered separate disturbances. The evaluation of the trend in area by patch size suggests that sufficient interspersion of harvested and unharvested area was maintained to meet the objective. The objective rests on the assumption that the rules for distinguishing disturbance patches reflect natural forest conditions. This assumption was not assessed by the audit team.
A-5: Residual patch retention objective: To ensure that harvest patches will contain leave areas that mimic as closely as possible the unburned portions within a natural wildfire in terns of size, number, shape, composition, orientation and connectivity. Target: Targets are as per NDPEG Table 3.	The 2005 FMP adopted the NDPEG targets as the targets for this objective, again with the implicit assumption that the NDPEG targets are reflective of natural post-fire conditions. In the 2007 AR, a spatial analysis of the residual area was undertaken for harvesting in 2005 – 2007 period. Considerable variation was found on each block, with 46 of 104 blocks examined having less residual area than NDPEG would require, however in total, 5017 ha of residual area was left versus a required level of 3994 ha. Shortfalls most often occurred on small blocks less than 100 ha, and the shortfalls were frequently of 5 ha or less. The audit team's own observations did not discern an overall shortfall of interior patches and peninsulas. Given the overall results, the audit team considers this objective to have been met.
A-6: Ensure that representative post-disturbance structural elements are left as a result of harvesting. Target: Maintain a minimum of 10 m3/ha of coarse woody debris throughout harvest rotation. Maintain a minimum average of 25 well-spaced standing dead or living tree/ha during	The 2005 FMP adopted the NDPEG targets as the targets for this objective. The field observations of the audit team supported the conclusion that this objective has been met on the forest during the audit period.

harvest operations, with at least 6 being large, live, high quality cavity trees.	
A-7: To maintain marten core habitat on the forest landscape. Target: Maintain 10 – 20% of the forest in suitable conditions, in cores between 30 – 50 km^2 in size, with a minimum of 75% of core habitat being suitable stands.	As per the marten guidelines, all core habitat areas exceed the minimum core size of 30 square kilometres and have a minimum of 75% of core habitat comprised of suitable stands. The core areas accounted for more than 10% of the forest which has the capability to produce marten, in suitable conditions. Target is met
A-8: Maintain habitat for selected featured species within the bounds of natural variation. Target: To maintain preferred and used habitat for all selected species within 20 % of the high and low point of the natural range as determined by the null run.	Table AR-14 from the draft 2010 Annual Report shows that, while the target was met for most species, it was not met for all. Notably, the target was not projected to be met for woodland caribou. In addition, the target is not projected to be met in either the medium term (20 years) or long term for black bear (foraging habitat), deer mouse, and snowshoe hare. For caribou, the direction provided through the Caribou Conservation Plan is "resetting" the manner in which habitat is to be managed, and bringing it to a higher level of importance, and hopefully precision, than was the case in previous plans. For black bear foraging habitat, the deviation is not large and the amount of habitat provided follows the trend line of the null scenario. For deer mouse and snowshoe hare, the differences between the targets and projected achievements are very small, and we believe well within the expected likely amounts to be present on the forest. Although the targets are not met for all species, we do not find cause for concern.
A-9: To ensure that all known and newly discovered nesting sites for eagles, hawks, osprey and herons are protected. Target: Follow the management guidelines associated with each species when nests are discovered.	Field inspection and interviews with Company and MNR staff indicated that protection is provided for all stick-nests. Target is met.
A-10: Maintain high conservation value forest	This objective exists to address the Company's FSC certification requirements. Most

attributes on the forest. Target: HCVs include critical fisheries values, nesting sites, outlier species, regionally rare species, protected areas and rare, threatened or vulnerable species. Woodland caribou, sturgeon rate special mention, also monarch butterfly.	of the emphasis is on the protection of woodland caribou. Company continues to devote efforts to managing HCVs. See section 4.3 for related discussion.
Socio-economic objectives	
B-1: To provide for a continuous and predictable supply of wood resources at a competitive cost to Spruce Falls Inc., now and in perpetuity. Target: Target is to supply a minimum of 750,000 m3/year of SPF at a competitive cost.	The Spruce Falls facility (now Tembec Kapuskasing) needs 750,000 m^3/yr of SPF and the 2005 FMP provides 1.1 million m^3/yr during 2005 – 2015, dropping to 975,000 m^3/ yr for the next 10 years. The SPF harvest troughs at 875,000 m^3/yr from 2025 to 2045, before it begins to increase again. The 2010 CFMP provides a similar level of harvest, although the low point is just less than 900,000 m^3/yr between 2030 and 2050. The cost of the wood supply is more difficult to assess based on the FMP, however the 2005 and 2010 FMP's both meet this goal and target. During the audit period, the most SPF was cut in 2005-06 (941,208 m^3) and the least in 2007-08 (375,401 m^3). The 2006-07 harvest exceeded 750,000 m^3 while the 2008-09 cut did not.
B-2: To provide a predictable supply of competitive cost wood fibre surplus to Spruce Falls' requirements, towards meeting the needs of other forest resource processing facilities outlined in Appendix E and F of the SFL. Target: Target for 2005 FMP term is to provide 480,000 m3 SPF and 340,420 m3 of aspen poplar.	In Appendix E, there is a commitment to send up to 15,000 m3/yr of spruce and balsam fir to St. Mary's Pulp, and Appendix F describes how the SPF above 765,000 m^3/yr is to be divided. In the 2005 FMP term, there is as much as 335,000 m^3/yr of SPF that was available, which is below target. The FMP almost meets the poplar target, providing up to 324,000 m^3/yr of poplar in the 2005 -2025 period. The available harvest volume rises thereafter. Thus, the SPF target is not met while the poplar target is essentially met. In the event, harvest volumes were well below the projected amounts. In 2005-06, approximately 191,000 m^3 of SPF were produced above the 750,000 m^3 mark, and 112,000 m^3 of surplus was produced in 2006-07.
B-3: To provide the public and local entrepreneurs with opportunities to harvest fuelwood and other resources.	The public harvested fuelwood and other small amounts of timber for personal use during the audit period. An average of 800 m^3 of personal use fuelwood was harvested in the first four years of the audit period (almost equally split between hardwood and softwood) and miscellaneous amounts (average less than 30 m^3/yr)

Target: To promote the use of under-utilized species and meet demand for fuelwood.	of wood for personal use. As a result of requests from the LCC, Tembec included two specific fuelwood-only areas in proximity to Kapuskasing and Opasatika within the 2010-2012 CFMP.
B-4: Maintain opportunities for a viable trapping industry by maintaining furbearer habitat within the bounds of natural variation. Target: Apply marten guidelines and dialogue with trappers.	The key aspect of this objective is application of the marten guidelines, which has been done through the FMP. In addition, the Company was in communication with trappers via a number of ways. Dialogue included trapper notification letters sent each year by MNR and Tembec to notify trappers of annual operations, annual public presentations of the AWS (LCC meetings), direct communication (i.e., phone calls), and meetings involving trappers and operational staff. In some cases, adjustments were made to operational plans to accommodate trappers; an example is the relocation / addition of reserves within block F054 to protect trail locations. Nevertheless, the Moose Cree feel that there should be no harvesting on traplines due to the negative impacts on trappers. Because traplines cover the entire Gordon Cosens Forest, any harvesting affects one or more traplines. The audit team concluded that the current approaches to mitigating timber harvest impacts on traplines were not producing results that satisfied anyone. For example, the Company has deferred harvests in one contentious area since 2008. While the targets for this objective have been met, the overall objective disregards the localized impacts of timber harvesting.
B-5: Maintain opportunities for resource-based tourism with licensed outfitters whose operations may be affected by forest management activities during the period of this plan. Target: Application of guidelines for Protection of Tourism Values and application of RSA's.	The LCC statement in the 2005 FMP Supp Doc indicates that its lone concern about the plan concerns the impacts on remote tourism through the use of herbicides and the addition and upgrading of road access. One remote tourist outfitter protested the planned operations in the Mons and Dumbell Lakes area, located in the southern portion of the forest, where the majority of the outfitter's outpost camps were located, and Tembec met with them to try to develop a compromise solution. In April 2010, just after the period covered by the audit, Tembec received objections from another tourism outfitter related to the impacts of the CFMP on his business. The Company can be considered to have met the target but it is too early to determine whether the objective can be considered to have been met.
B-6: To plan and manage forest access in a manner that achieves an appropriate balance between accessed areas for those who want	Access strategy forms an important part of the FMP and a use management strategy is provided for each road.

access to the forest, and remote roadless and /or functionally roadless areas for those who value this attribute of the forest. Target: Development of a road use access strategy.	Target is met
Silviculture Objectives and Strategies	
C–1: To maintain or enhance future timber yields by intensively managing selected sites. Target: Commercial thinning and first generation tree improvement will be used to enhance yields. Comm. thinning of black and white spruce will occur through CFSA exemptions.	The audit team visited some sites that are planned for intensive or elite management under the Company's NEBIE system, however the renewal was at an early stage and it is not clear what management intensity will be the end result. The Company did not undertake any commercial thinning during the audit period; the audit team found that the province has recently lowered some key policy barriers to this practice and is reviewing how the process will be considered within the silvicultural guides. Tree improvement efforts have been on target. The Company has annually conducted or coordinated activities such as cone collection and is using stock from the tree improvement program to conduct planting on upland sites. The company continues to participate in the Northeast Seed Management Association (NESMA).
C-2: Address existing forest health concerns on the forest such as balsam fir depleted areas, aspen decline areas, and loss of productive land due to slash piles, roads and site disturbance. Target: Slash management, minimizing site damage and roads, intensive regen of balsam fir areas to spruce, targeting aspen decline areas.	The 2005 AR notes that poplar yield curves were reduced in the 2005 FMP to account for the impacts of forest tent caterpillar infestation and poplar decline. In the first year of the FMP period, almost 95% of the annual average planned poplar harvest was cut, but the AR cautioned that the OSB market was looking bleak. This in fact did portend significant declines in poplar utilization, which declined from almost 300,000 m^3 in 2005-06 to roughly 75,000 m^3 in 2007-08, before plummeting to 8,000 m^3 in 2008-09. The initial drop was caused by the disappearance of OSB markets, and the final decline as Levesque Plywood took very little wood from the Forest. As a result, there was less harvesting of the poplar decline areas during the last three years of the audit period. The Company has undertaken some slash management – some has been used as biomass fuel but distance and relative cost to alternate biomass sources are paramount – does not appear to offer a long term or even a medium term solution. The Company is concerned with costs and MNR will not allow Company to treat

	slash burning as a low complexity burn until October. The audit team recommends that the Company continue its efforts to better manage slash (Recommendation #6) – the scale of the opportunity is that slash piles created during the audit period covered approximately 880 ha. The audit team also recommends that MNR and the Company seek mutually acceptable revisions to regulations governing the burning of slash to make the operation feasible on the Forest (Recommendation #7).
C-3: Employ cost-effective renewal and tending treatments that will provide for a new free-growing forest that meets all desired benefits. Target: Application of a balanced and cost-effective renewal program.	The auditors found the renewal program was effective overall. Site visits confirmed site preparation, planting and tending operations are successful. Aerial seeding of lowland spruce sites was completed. Although the auditors were unable to confirm the incremental benefit of this treatment compared to natural regeneration, the Company had evidence that this relatively low-cost treatment boosts the stocking of these sites. The assessment of the FTG program covered 10,000 ha of area that had been assessed during the audit period. On almost all areas, the assessment was accurate – the audit team observed only one site that had been clearly mistyped and one group of mixedwood blocks had indistinct boundaries. FTG assessments conducted by MNR and the Company were in general agreement on stocking, but differed on their assessments of species composition. Recommendation #11 has been made to rationalize these differences as part of a review of the SEM program.
Other Values Objectives and Strategies	
D-1: To conduct timber management activities in a manner that minimizes and mitigates the impacts on environmental quality. Target: Show continual progress towards meeting Spruce Falls environmental policy.	No serious issues regarding environmental degradation were noted in the field inspection. In addition, the Company maintains a management system that is consistent with ISO14001. The target is met.
D-2: Minimize the impacts on water quality and aquatic habitat within areas of harvest, renewal, tending and access operations. Target: Use of appropriate prescriptions.	Site inspection found appropriate use of water quality AOCs and prescriptions. The target is met
D-3: Attempt to minimize any negative impacts that forest management activities may have on other forest users such as anglers and hunter	The planning team for the 2010 CFMP made efforts to minimize the impact of operations on other users. The use of AOCs for some values, especially the set of AOC's specifically tailored for individual remote tourism outfitters, is one approach

groups, snowmobile associations, bear management areas and commercial bait fisherman. Target: Assessment based on comments and reviews of implementation from concerned parties and the LCC.	that was followed to achieve the objective. The Company was also willing to meet with stakeholders who had concerns of how forest operations would impact their use of the forest. As indicated under the assessment of objective B-5, there was some unhappiness on the part of some remote outfitters regarding the expected impact of planned operations on their business.
D-4: Maintain the integrity of the quality fisheries zones located in the Chapleau District. Target: Restricted vehicle access and other access restrictions in the Quality Fisheries Zones located within Chapleau Dist.	Maintenance of remote fishing opportunities in the Chapleau district is the subject of Recommendation #3.
D-5: Protect all known, potential and newly discovered cultural heritage values on the Gordon Cosens Forest. Target: Use output of the Heritage Assessment Tool (HAT) on High potential Cultural heritage areas in areas Selected for Operations.	There were no known cultural heritage values destroyed or damaged in the forest during the audit period. There were no non-compliances to that effect and AOC's around known sites were respected. The 2010 CFMP describes that the provincial Cultural Heritage Specialist provided the Planning Team with output from the Heritage Assessment Tool (HAT) that was used to identify potential Archeological Potential Areas on the Forest, which were assigned an AOC that limited ground disturbance and road-building effort. The audit team considers that the intent of this objective was met during the audit period.

APPENDIX 3

COMPLIANCE WITH CONTRACTUAL OBLIGATIONS

Licence Condition	Licence Holder Performance
Payment of Forestry Futures and Ontario Crown charges	The Company's payments are up to date.
Wood supply commitments, MOAs, sharing arrangements, special conditions	The SFL has seven wood supply commitments and three Appendix F special conditions. The extended closure of many of the mills with commitments makes it difficult to assess performance. In many cases, the commitment was met in the first year or two of the audit period before demand fell off dramatically. The forest met the Columbia commitment in 2005/06 and 2007/08, but the challenge of utilizing the non-veneer component of the tree created a reluctance to harvest mixedwood stands or stands with considerable hardwood but a low veneer return. Parts of special condition #1 were met but the in 2007/08 and 2008/09, the harvest volume was below the 750,000 m^3 threshold.
Preparation of FMP, AWS and reports; abiding by the FMP, and all other requirements of the FMPM and CFSA	Preparation of the FMP, AWS, Annual Reports and other reports was undertaken according to the FMPM.
Conduct inventories, surveys, tests and studies; provision and collection of information in accordance with FIM	This Company has been very active in conforming to minimum FIM requirements and collecting information beyond those requirements. The historical record on the forest is among the best two or three in the province. The Company used the Patchworks spatial model, at considerable additional time and expense (also borne by MNR), in a manner that was collaborative with MNR, resulting in a significant improvement in the ability to forecast forest management conditions spatially. The Company was also the first in Ontario to pursue a truly digital LIDAR based inventory.
Wasteful practices not to be committed	No wasteful practices were observed in the softwood and veneer components of the harvest, however the lack of market for the remaining hardwood creates a challenging issue for MNDM&F.
Natural disturbance and salvage SFL conditions must be followed	The licence conditions regarding natural disturbance and salvage harvesting were followed. A blowdown event in summer 2006 was salvaged by the Company primarily in

	2007, although some salvage also took place in late 2006 and in 2008. No salvage was planned in the 2005 FMP.
Protection of the licence area from pest damage, participation in pest control programs	There were no pest outbreaks during the audit period, and no pest control operations were needed.
Withdrawals from licence area	There were no land withdrawals from the Gordon Cosens Forest during the term of the audit.
Audit action plan and status report	The action plan dealt with all the recommendations of the previous IFA. The document was submitted four months late, but the delay did not hamper the implementation of actions to address the recommendations. The Status Report was comprehensive. It was initially completed on time but took a while to work through the system, so that all signatures were not in place until April 2009, approximately 4 months late.
Payment of forest renewal charges to Forest Renewal Trust (FRT)	Payments have been made and the Trust exceeded the minimum balance as required.
Forest Renewal Trust eligible silviculture work	Field inspections of the 2008-09 operations confirmed that the silvicultural operations were consistent with the FOP, which were in turn eligible for trust fund reimbursement. Maps and records were readily available.
Forest Renewal Trust forest renewal charge analysis	Renewal rates reviewed annually on this forest. Rates have been adjusted in response to expected activity and efficiencies gained through targeted planting and herbicide application. The Renewal Trust Fund has been managed with particular attention to cash flow over this audit period. The Company has met both its fiscal obligations to maintain minimum balance and its silvicultural obligations to manage its renewal program effectively.
Forest Renewal Trust account minimum balance	Required minimum was maintained.
Silviculture standards and assessment program	Silvicultural standards were maintained at a high level and there was a great deal of assessment undertaken (approx 100,000 ha) during the audit period.
Aboriginal opportunities	During the audit period, the Term & Condition 34 reports indicate an improved level of economic activity by First Nations harvesting companies on the Forest, as well as highlighting the engagement of the Moose Cree and Constance Lake First Nations on the 2010 FMP

	planning team.
Preparation of compliance plan	Preparation of compliance plan met contractual requirements.
Internal compliance prevention/education program	Internal compliance prevention measures met contractual requirements.
Compliance inspections and reporting; compliance with compliance plan	Compliance inspections and reporting met contractual requirements.
SFL forestry operations on mining claims	Written notices were provided to all mining claim holders on the SFL whose operations were within the proposed operating areas, and Company staff made themselves available for further discussions with mining claim holders if requested.

Review of Previous Audits' Recommendations

The previous IFA, undertaken in 2005, contained nine recommendations plus a recommendation to extend the SFL. This audit reviewed the responses to these recommendations and found that most had been addressed. Others remain works in progress, such as the recommendation to Corporate MNR to monitor the impacts of implementing forest management guidelines. In response to a recommendation directed at fixing open deck bridges, the Company, together with its overlapping licensees, identified and repaired 21 open-deck bridges on the forest. Recommendation #8 in this audit, related to derelict bridges on the Forest, is intended to address other issues with other bridges. Another of the more significant recommendations from the previous audit was to revise the structure of the LCC and its terms of reference. This was done and the audit team considered that the LCC functioned very well during the term of this audit.

APPENDIX 4 – AUDIT PROCESS

Overview

The Crown Forest Sustainability Act (CFSA) directs the Minister of Natural Resources to conduct a review of each tenure-holder every five years to ensure that the licensee has complied with the terms and conditions of its licence. The Independent Forest Audit (IFA) contributes to this mandate, as well as complying with the direction to the Ministry laid out in the 1994 Class EA decision, subsequently confirmed in the 2003 Declaration Order[7]. Regulation 160/04 under the CFSA prescribes the minimum qualifications required by the audit team and sets out direction related to the timing and conduct of IFA's, the audit process and reporting.

The Independent Forest Audit Process and Protocol (IFAPP) sets out in detail the scope and process requirements of an IFA, and contains approximately 150 individual audit procedures. The IFAPP, reviewed and updated annually by the MNR, states that the purpose of the audits is to:

- "assess to what extent forest management planning activities comply with the Forest Management Planning Manual and the [Crown Forest Sustainability] Act;
- assess to what extent forest management planning activities comply with the Act and with the forest management plans, the manuals approved under the Act, and the applicable guides;
- assess the effectiveness of forest management activities in meeting the forest management objectives set out in the forest management plan, as measured in relation to the criteria established for the audit;
- compare the forest management activities carried out with those that were planned;
- assess the effectiveness of any action plans implemented to remedy shortcomings revealed by a previous audit; and
- review and assess a licensee's compliance with the terms and conditions of the forest resources licence."

In 2009, MNR introduced a streamlined reporting procedure. The body of the audit report provides a succinct discussion of the audit process and results, with more detail on key aspects contained in the appendices. There are two key types of audit findings – recommendations and best practices. A recommendation is explicitly defined in the IFAPP as follows:

Recommendation - sets out "a high level directional approach to addressing [a] non-conformance. In most cases, recommendations follow from the observation of material non-conformances. In some instances, however, auditors may develop recommendations to address situations where they perceive a critical lack of effectiveness in forest management activities, even though no non-conformance with law or policy has been observed."

[7] Declaration Order regarding MNR's Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario, approved by Order in Council 1389/03 on June 25, 2003.

Recommendations can be directed towards the Company and/or at the appropriate administrative level of the Ministry of Natural Resources (District, Region or Corporate). Auditees must address all recommendations in follow-up actions.

If the Audit Team feels that an aspect of forest management is exceptional it may be identified as a best practice. The IFAPP states that "Highly effective novel approaches to various aspects of forest management may represent best practices. Similarly, applications of established management approaches which achieve remarkable success may represent best practices." In contrast, "situations in which forest management is simply meeting a good forest management standard" do not qualify.

Audit Procedures and Sampling

The IFAPP describes each of the components of the audit process and contains the audit protocol, which constitutes the main framework for the audit. The procedures, which are the basis for assessing the auditees' compliance and effectiveness, are organized according to eight principles. A positive assessment of the procedures under each principle results in the principle being achieved. A negative assessment of a procedure typically leads to a recommendation.

IFAPP segregates the procedures into three classes based on the risk to forest sustainability should the management aspect covered by the procedure not be achieved:

- "low risk" - strictly administrative in nature;
- "moderate risk" - have an administrative component but also a bearing on sustainability; and
- "high risk" – related to sustainable forest management.

For each principle, the audit team is required to sample 20 – 30% of the procedures identified as low risk and between 50 – 75% of the procedures considered to be moderate risk and all the procedures identified as high risk. This risk-based approach is intended to reduce the auditor and auditee workload and focus the audit on more significant issues. The table below identifies, for each principle, the number of procedures in each risk class, the number audited, and the proportion that are audited. Because the Gordon Cosens Forest has been certified to a third-party certification standard, the IFAPP does not require the IFA to assess compliance with Principle #1 (commitment) and the Human Resources part of Principle 5 (System Support).

Procedures Audited, by Risk Category								
Principle	Low Risk			Medium Risk			High Risk	Comments
	Applicable (#)	Selected (#)	% Audited	Applicable (#)	Selected (#)	% Audited	Audited (#) (100% Audited)	
1. Commitment	0	N/A	0	2	N/A	0	0	This principle was not audited because the Forest has been certified to a third-party standard.
2. Public Consultation and Aboriginal Involvement	0	N/A	N/A	6	5	83	2	We opted to audit a higher percentage of medium procedures than required since we think these are important aspects. We opted not to assess whether public notices of inspections were issued, since MNR usually ensures that this is done properly.
3. Forest Management Planning	7	3	43	11	9	82	41	Low risk procedures regarding the content of the plan introduction, SEV briefing note, index to EA components of the FMP, and the plan's contributor page were not assessed since these are examined during plan review. Medium risk procedures related to documentation of the certification and approval of the FMP, and the plan description of the unit's physical features were also omitted for the same reason.
4. Plan Assessment & Implementation	1	1	100	1	1	100	9	All procedures under this principle were audited.
5. System Support	0	N/A	N/A	1	1	100	0	The Human Resources criterion was not audited because the Forest has been certified to a third-party standard; the single document control criterion was assessed.
6. Monitoring	0	N/A	N/A	7	4	43	11	Just more than half of the medium risk procedures under this principle were audited.
7. Achievement of Objectives and Forest Sustainability	0	N/A	N/A	2	0	0	15	Two medium risk procedures that only applied to the RPFO were not audited, since the Year Ten AR is available.
8. Contractual Obligations	0	N/A	N/A	4	3	100	8	All procedures were audited except one medium risk procedure pertaining to land withdrawals (of which there were none).
Totals	8	4	50	34	23	68	86	

The audit commenced with the preparation of a detailed audit plan[8], which described the procedures to be used during the audit and assigned responsibilities to members of the Audit Team. A pre-audit meeting was held between the lead auditor, Tembec, MNR, and the chair of the Local Citizens' Committee (LCC). The primary purposes of the meeting were to familiarize the auditees with the audit process, review the Audit Plan, and make a preliminary selection of sites to inspect in the field during the audit. Subsequently, some minor adjustments were made due to access issues, to improve the balance of operations and sites, and to reflect comments from the public and the LCC.

The focus of the audit was an intensive six-day site visit, which included document review, interviews and inspections of a variety of sites throughout the Forest where activities had been undertaken during the audit period. There was considerable follow up afterwards during the preparation of the draft audit report.

Sampling and Sample Intensity

The IFAPP required the Audit Team to sample at least 10% of the area treated during the audit period for each major activity, such as harvesting, site preparation, and regeneration. Activities that carried higher risk or that were only undertaken on relatively small areas were to be sampled more intensively. The audit met or exceeded the minimum sample size specified in the IFAPP for all activities, with the overall level of sampling ranging from 10 to more than 20% for key activities. The Company had assessed 100,000 ha of area for free-to-grow status during the audit period and 10,000 ha of this area was inspected in the field, primarily from the helicopter. As we assessed the FTG, it became apparent that the Company's assessments were accurate and we did not need to increase the sample size.

Examples of operations were examined in each major forest unit present on the Forest, representing a range of harvesting systems, year of harvest, season of operation, and silvicultural treatment packages. A number of sites where renewal activities had been conducted during the audit period were visited to evaluate the appropriateness and quality of these treatments and to perform an initial evaluation of their effectiveness. These included sites that were site prepared, seeded, planted, and tended, and those for which natural regeneration treatments were prescribed.

The IFAPP directs the auditors to verify in the field at least 10% of the areas reviewed in specified procedures undertaken by KPMG. This review was undertaken for the 2007-08 fiscal year, however it was not available to us in time for the audit week. As a result, while the audit team made sure to include a substantial amount of area operated on during the target year.

The table below shows the total amount of each key activity that took place during the audit period, and the sample size and sampling intensity in the IFA. In the table, the total in the audit period refers to the areas that were harvested, site prepared, and renewed during the audit period. The next column to the right shows the total area of the treatments viewed during this audit. The sampling intensity is calculated by dividing the area of treatments viewed by the total area (or other relevant measurement statistic) during the five-year period.

[8] ArborVitae Environmental Services Ltd. Gordon Cosens Forest Independent Forest Audit Plan, July 23, 2010.

Table 1. Sampling intensity of the field operations, by key feature investigated.

Feature	Total in Audit Period	Total Sampled	Sample Intensity %
Harvest (ha)	41,195	6,262	15.2
Site Preparation (ha)	3,071	1,065	34.7
Natural Regeneration (ha)	40,075	12,869	32.1
Planting (ha)	16,707	3,947	23.6
Seeding	907	487	53.7
Tending (ha)	29,246	6,502	22.2
Free-to-Grow Assess (ha)	100,000	10,000	10.0
Areas of Concern (no.) *	37	12	32.4
Water Crossings**	38	13	34.2
Primary and Branch Roads (km)***	31.8	22	69.2

* Number shown is different types of AOCs.
** Includes aerial reconnaissance.
***Funded at least in part through the Road Construction and Maintenance Agreement with the MNR.

The table is intended to portray an approximate level of effort only. There are several factors which preclude too-precise an interpretation of the figures presented in the table. Although we viewed many individual harvest and/or treatment blocks during the field inspection portion of the audit, more than one aspect of forest management was inspected at some sites. For example, at sites where harvesting had taken place, harvest practices, compliance issues, road construction, Area of Concern (AOC) protection, site preparation, and regeneration activities may all have been inspected. Finally, of the area figures shown above, it should be noted that we did not inspect every hectare of the blocks we visited – such a level of effort would be infeasible.

Summary of Consultation and Input to Audit.

IFAPP also requires the audit team to seek public input into the audit. A sample of 325 individuals and groups, taken from the Ministry's district mailing list, was invited by mail (sent early August, 2010) to provide input into the audit. Notices requesting comment were placed in four regional newspapers – Chapleau Express (July 17), The Weekender (July 15), Le Nord (July 21) and Wawatay News (July 22). LCC members were encouraged to solicit comments from the interest groups that they represent and communicate this to the audit team.

The audit team contacted the nine Aboriginal communities that have expressed an interest in the Forest – Moose Cree, Constance Lake, Brunswick House, Chapleau Cree, Mattagami, Flying Post, Taykwa Tagamou, Matachewan and Missinabie Cree First Nations – by June 2 letter to inform them that the audit was taking place and to invite them to participate. Additional efforts were made to meet with representatives from Moose Cree First Nation prior to the main audit week but were unsuccessful in bringing about a meeting.

During the audit week, the auditor met with a planning team representative from Constance Lake and had a discussion with Mattachewan's new Lands & Resources Manager.

Regarding the LCC, the contact information was outdated and contained names of people no longer participating in the LCC, while some participants listed in the latest LCC minutes were not included in the contact list provided. In the end meetings were arranged with five LCC members.

MNR and the LCC provided a great deal of input to the audit in all areas, and this is largely reflected throughout the audit report. An initial conference call was held for the audit team, hosted by the Company and with MNR participation, describing the use of Patchworks and the implications for the planning process and the plan itself. Representatives on the call from the two auditees agreed that the end result was much better plan, although it was more expensive and time-consuming than originally anticipated. The audit team also held a conference call with Company staff regarding the MOU that is being negotiated with the Moose Cree. MNR and Moose Cree organized a workshop /meeting in Moosonee where the lead auditor was able to present an overview of key audit results and discuss the primary issues from the Moose Cree perspective. This meeting also provided invaluable insight into the relationship between MNR and the Moose Cree.

APPENDIX 5 – LIST OF ACRONYMS

AOC	Area of Concern
AHA	Available Harvest Area
AR	Annual Report
AWS	Annual Work Schedule
B.Sc.F	Bachelor of Science in Forestry
CCP	Caribou Conservation Plan
CFMP	Contingency Forest Management Plan
CFSA	Crown Forest Sustainability Act
Class EA	Class Environmental Assessment for Timber Management on Crown Lands in Ontario
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
FIM	Forest Information Manual
FMP	Forest Management Plan
FMPM	Forest Management Planning Manual
FMU	Forest Management Unit
FOIP	Forest Operations Inspection Program
FOP	Forest Operations Prescription
FOR	Forest Operations Report
FRI	Forest Resource Inventory
FRT	Forest Renewal Trust
FSC	Forest Stewardship Council
FTG	Free-to-Grow
FU	Forest Unit
ha	hectares
HAT	Heritage Assessment Tool
IFA	Independent Forest Audit
IFAPP	Independent Forest Audit Process and Protocol
km	kilometres
LCC	Local Citizens Committee
LTMD	Long Term Management Direction
m3	cubic meters
MNDM&F	Ontario Ministry of Northern Development, Mines & Forests
MNR	Ontario Ministry of Natural Resources
MOA	Memorandum of Agreement
NDPEG	Natural Disturbance Pattern Emulation Guide
NEBIE	Natural disturbance, Extensive, Basic, Intensive & Elite (renewal)
NESI	North East Science and Information
NESMA	North East Seed Management Association
OSB	Oriented Strand Board
RPF	Registered Professional Forester
RPFO	Report of Past Forest Operations
RSA	Resource Stewardship Agreement
SEM	Silvicultural Effectiveness Monitoring
SFL	Sustainable Forest Licence
SFMM	Strategic Forest Management Model

APPENDIX 6 – AUDIT TEAM MEMBERS AND QUALIFICATIONS

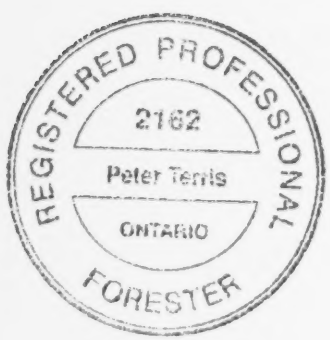
Auditor	Role	Responsibilities	Credentials
Dr. Jeremy Williams, RPF ArborVitae Environmental Services Ltd.	Lead Auditor, Harvest and Wood Supply Auditor	• overall audit coordination; • oversee activities of other team members; • liaise with Company & MNR; • review and inspect harvesting records and practices; • review aspects of forest management related to forest economics and social impacts; • reviews FMP modeling inputs and activities	B.Sc.F., Ph.D. (Forest Economics); more than 20 years consulting experience in Ontario related to forest management, planning, wood supply modeling, and forest economics; participated in 21 previous IFA assignments; certified as an auditor by the Quality Management Institute.
Mr. Chris Wedeles ArborVitae Environ. Services Ltd.	Wildlife and Roads Auditor	• review and inspect Areas of Concern Documentation and Practices; • review and inspect aspects of forest management related to environmental practices and wildlife management integration; • review and inspect access and water crossings	B.Sc., M.Sc. (Wildlife Biology); 21 years wildlife and forest ecology and experience in Ontario; completed almost 31 previous independent forest audits; certified as an auditor by the Quality Management Institute.
Mr. Craig Howard. R.P.F.	Silvicultural Auditor	review and inspect silvicultural practices and related documentation; review and inspects selected environmental aspects of forest management	Craig is a R.P.F. and certified environmental auditor. He has participated as an auditor or lead auditor on sustainable forest management audits totaling some 30 million ha, under the ISO 14001, Sustainable Forestry Initiative and Forest Stewardship Council standards.
Mr. Tom Clark	Planning Auditor	review FMP and related documents to ensure compliance with FMPM and other regulations; review plan development process for conformity with FMPM	M.Sc. Zoology (wildlife ecology). Tom has 28 years experience in wildlife ecology; specializing in environmental impacts on wildlife, particularly forestry. Tom is an experienced auditor and has participated in more than 20 Independent Forest Audits from 1996 to 2009.
Mr. Marcelo Levy, Responsible Forestry Solutions	Consultation Auditor	Review documentation related to forest management consultation Interview stakeholders, LCC, and First Nations regarding forest management issues	B.Sc. (forest engineer) and M.Sc. in Environmental Studies. Directed the FSC Canada Standards Program until 2005, when he formed the current Company.

APPENDIX 7 - TREND ANALYSIS

The Comparison and Trend Analysis Report contained in this Appendix was produced by Tembec. Although the Report was reviewed by the Audit Team, the Audit Team had no role in writing it.

2010 Gordon Cosens Forest Independent Forest Audit

Trends Analysis for 2005-2025 Planning Period



Prepared by:
Peter Terris, R.P.F.
Planning Forester
Tembec-Kapuskasing

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1.0 Introduction

This trend analysis compares the planned and actual forest management activities that occurred on the Gordon Cosens Forest (GCF) during the period April 1st, 2005 to March 31st, 2010. The analysis also includes a summary of planned versus actual forest management activities, which occurred on the forest during the two previous 5-year planning terms (i.e., 1995-2000 and 2000-2005), as well as the forecasted results for the current planning term (i.e., 2010-2012). In addition, this analysis highlights significant milestones and historical events that have occurred on the forest.

1.1 Gordon Cosens Forest - Administration

The planning and overall administration of the Gordon Cosens Forest (Sustainable Forest Licence # 550039) is the responsibility of Tembec situated in Kapuskasing, Ontario and the Ontario Ministry of Natural Resources (OMNR). Hearst District has taken a lead role for other OMNR districts in facilitating the preparation and approval of the 2005-2025 GCF forest management plan.

Under the authority of the company's Sustainable Forest Licence, Tembec is accountable for:

1) Preparing forest management plans and annual work schedules which document all proposed operations;
2) Implementing and monitoring the harvesting and renewal operations and ensuring they are consistent with the plans;
3) Preparing annual reports which document the actual results of forest operations; and
4) Compliance monitoring and compliance.

Under the SFL agreement, the Ministry of Natural Resources will be responsible for:

1) Working jointly with Tembec to produce forest management plans;
2) Approving all forest management plans and annual work schedules;
3) Conducting periodic forest operations inspections to ensure compliance with plans and regulations,
4) Maintaining and confirming non-timber value information;
5) Management of non-timber forest resources (i.e. fish and wildlife);
6) Land use management; and
7) Conducting periodic independent audits of company performance.

The boundary of the Gordon Cosens Forest, as shown in Figure 1a, has not changed since the previous plan. The current boundary reflects the amalgamation of the southern portion of the Kapuskasing Crown Management Unit with the Gordon Cosens Forest, which occurred on April 1, 2000. The original boundary of the Gordon Cosens Forest was established in 1980 with the signing of the Forest Management Agreement on September 19th of that year. The original boundary of the Kapuskasing Crown Management Unit was created on October 26, 1989 as a result of the amalgamation of the Kapuskasing Crown Management Unit and a portion of the Opasatika Crown Management Unit, which was omitted from the Hearst Forest when it was established in 1986.

The Gordon Cosens Forest is situated in the Northeast Region of the Ontario Ministry of Natural Resources (OMNR). The boundary of the Gordon Cosens Forest overlaps four OMNR district boundaries including Cochrane, Chapleau, Hearst and Timmins Districts. The general location of the Gordon Cosens Forest is shown in on the Management Unit Map (Figure 1).

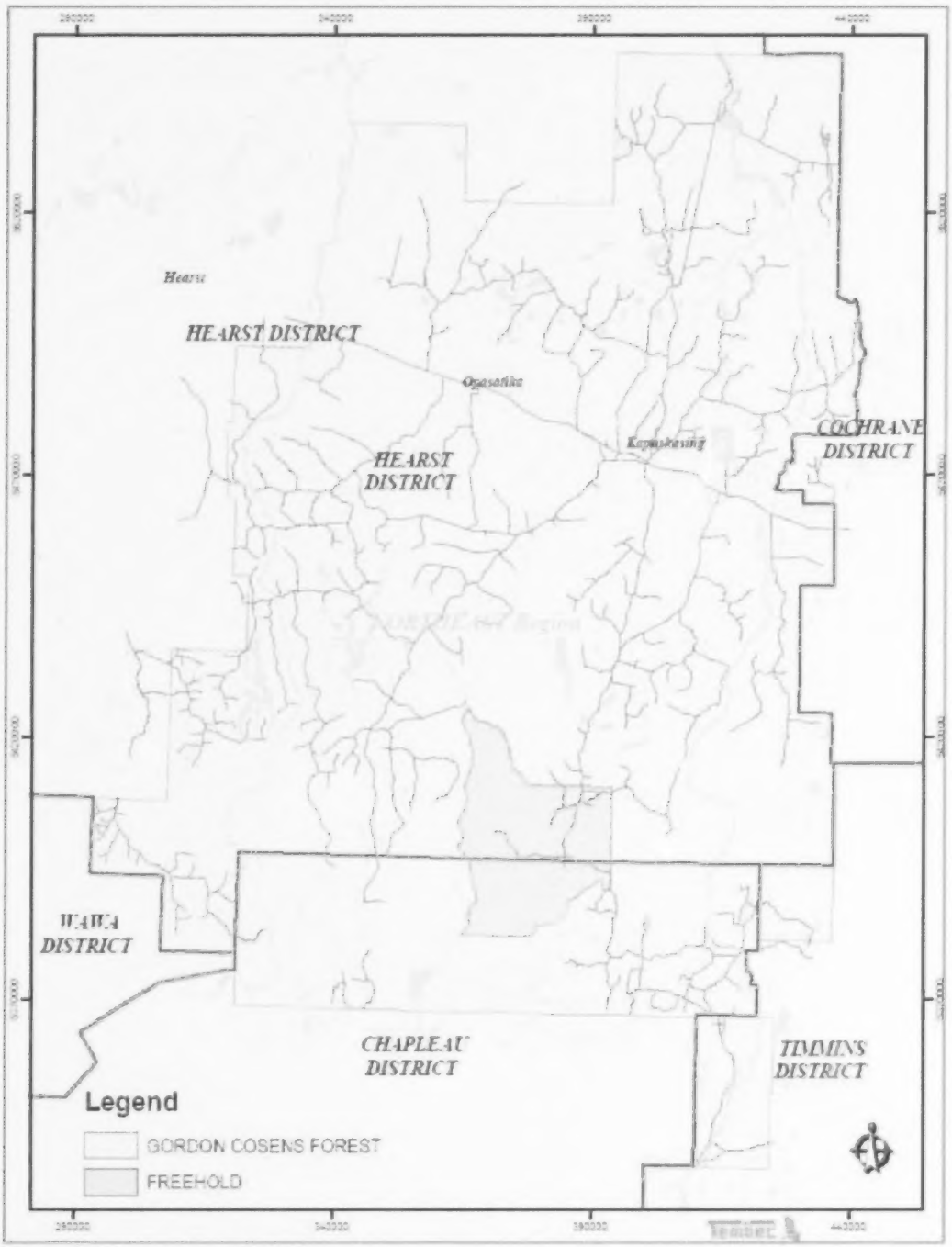

Figure 1: Management Unit Map

There are numerous communities located within the management unit including Strickland, Fauquier, Moonbeam, Kapuskasing, Val Rita-Harty, Opasatika and Mattice. There are no native communities within or adjacent to the management unit.

There are ten companies that hold some sort of tenure to harvest or utilize timber produced from the Gordon Cosens Forest. These companies are Tembec-Kapuskasing, Lecours Lumber Co. Limited (Calstock), Tembec-Hearst, Tembec-Timmins, Cayouette Cabinets, White Cedar Products Inc., Grant Forest Products Inc. (Englehart and Timmins), Columbia Forest Products – Levesque Division (Hearst), St. Mary's Paper Corp. (Sault Ste. Marie), and Norbord Industries Inc. (Cochrane).

Several companies including Lecours Lumber Co. Limited, Tembec-Hearst and Tembec-Timmins also share some responsibility for forest management through overlapping licence agreements with the Sustainable Forest Licence holder.

The Sustainable Forestry Licence holder and primary user of wood on the Gordon Cosens Forest is Tembec. In Appendix "F" of the current Sustainable Forestry Licence for the Gordon Cosens Forest, Tembec has an annual planned SPF volume of 765,000 cubic metres per year of which 750,000 cubic metres is allocated to Tembec-Kapuskasing and 15,000 cubic metres is allocated to St. Mary's. As per the Sustainable Forest Licence, Tembec shall make available for local area sawmills, for sawlog/chip exchange or direct sale, approximately 20% of the Company's annual softwood harvest of 750,000 cubic metres.

Wood supply commitments to facilities other than Tembec for the Gordon Cosens Forest are as follows:

- Grant Forest Products Inc., Timmins, Ontario
  - non-veneer quality white birch logs
  - non-veneer quality aspen poplar logs

- Grant Forest Products Inc., Englehart, Ontario
  - non-veneer quality aspen poplar logs

- Norbord Industries Inc., Cochrane, Ontario (now True North Plywood)
  - veneer quality aspen poplar

- Columbia Forest Products (Levesque Plywood Limited), Hearst, Ontario
  - veneer quality aspen poplar
  - veneer quality white birch

- St. Mary's Paper Corp., Sault Ste. Marie, Ontario
  - spruce and/or balsam fir

Note that St. Mary's is supplied by Tembec and Synco Timber Ltd., a traditional licensee from the former Kapuskasing Crown Management Unit, which harvests part of the St. Mary's commitment.

- White Cedar Products Inc., for use in Cayouette Cabinets mill at Moonbeam, Ontario
- white cedar

In addition, to the facilities with specific commitments from the Forest, several forest resources facilities relay on management unit contributions from the Gordon Cosens Forest towards meeting their Ministry Recognized Operating Levels (MROLs). In summary, the MROLs summarized in the August 18, 2008 letter to the planning team from OMNR Regional Planning staff are as follows:

- Tembec, Kapuskasing, Ontario
- Lecours Lumber Co. Limited, Calstock, Ontario
- Tembec, Hearst, Ontario
- Tembec, Timmins, Ontario
- Cayouette Cabinets, Moonbeam, Ontario

In addition to the above, there are a number of smaller operators that harvest residual species such as larch and white birch for personal use and fuelwood.

On April 1st, 2003, the Gordon Cosens Forest obtained FSC certification. The certification included the 75,000 ha freehold parcel owned by Tembec. The Gordon Cosens Forest was re-certified on April 1st, 2008.

2.0 Trends Analysis

The following trends analysis was developed in accordance with the Forest Management Planning Manual (2009) and direction provided by OMNR. The analysis draws on information obtained from Reports of Past Operations documentation developed for the 1990-1995 and 1995-2000 plan terms, the Year 10 Annual Report developed for the 2000-2005 planning term and Annual Reports prepared for the 2005-2006 to 2008-2009 operating years. It should be noted that the Year 10 Annual Report for the 2005-2010 planning term was not used for this analysis, as much of the information associated with the final operating year of the 5-year term (i.e., 2009-2010) is currently unavailable. As such, the actual values for the 2005-2010 planning term reported in the accompanying tables reflect results for the first 4 years of this planning term. The values reported for the current plan were derived from the 2-Year Contingency Forest Management Plan, which was approved on March 23rd, 2010. The 2-Year Contingency Forest Management Plan was developed using the OMNR approved Long-term Management Direction developed for the 2010-2020 GCF FMP.

2.1 Summary of Planned and Actual Harvest Levels

Table AR-7 provides a summary of annualized planned and actual harvest levels for the 1995-2000, 2000-2005 and 2005-2010 planning terms. The forecasted annualized harvest levels for the current (i.e., 2010-2012) plan are also outlined in the table. Table RPFO-3 was the information source for the 1995-2000 term and table AR-1 was used for the 2000-2005 and 2005-2010 planning terms. The values reported for the current plan were obtained from table FMP-15. It should be noted that the actual harvest levels for the 2005-2010 plan reflects annualized harvest areas for the first 4 years of the 5 year plan period. The forecasted harvest levels were derived from the OMNR endorsed Long-term Management Direction developed for the current forest management plan.

2.1.1: 1995-2000 Plan Term

During the 1995-2000 planning term, actual harvest area represented 85% of the planned area. The achievement by forest unit is summarized in the following table.

Forest Unit	*Planned Harvest Area (5 years)*	*Harvest To Date*	*Percent Harvest to Date*
Pn1 (PJ1)	4,692	3,982	85%
Upc (SF1)	n/a	n/a	n/a
Lsf (SB1)	30,422	25,605	84%
Upd (SP1)	n/a	n/a	n/a
Lswp (LC1)	9,886	7,198	73%
Upm (MW2)	n/a	n/a	n/a
Hwd (PO1, BW1)	n/a	n/a	n/a
Ltn (Lowland transition)	n/a	n/a	n/a
U (Upland)	59,696	53,346	89%
N (Non-marketable)	5,157	3,341	65%
TOTAL	109,852	93,473	85%

Table 2: Planned vs. Actual Harvest Levels by Forest Unit – 1995 to 2000

The primary factor contributing to the differences between the planned depletion area and actual depletion area was the occurrence of unplanned bypass. Bypass areas generally contain timber which is shown as merchantable in the Forest Resource Inventory but is actually too small in diameter or too scattered to allow for an economical harvest or was incorrectly identified in terms of age, species, size or quality in the inventory. During the preparation of the1995-2015 forest management plan, bypass was anticipated to be 8.7% of the harvest allocation. During the plan term, actual bypass was 17% of the actual harvest area. The observed increase was attributed to the discovery of large areas of blowdown and small diameter wood that was deemed uneconomical to harvest.

2.1.2: 2000-2005 Plan Term

During the 2000-2005 planning term, actual harvest area represented 93% of the planned area. The achievement by forest unit is summarized in table 2.

Forest Unit	*Planned Harvest Area (5 years)*	*Harvest To Date*	*Percent Harvest to Date*
Pn1 (PJ1)	2,185	2,062	94%
Upc (SF1)	15,475	14,837	96%
Lsf (SB1)	19,134	17,870	93%
Upd (SP1)	1,371	1,059	77%
Lswp (LC1)	5,905	4,929	83%
Upm (MW2)	17,429	16,539	95%
Hwd (PO1, BW1)	7,426	7,010	94%
Ltn (Lowland transition)	1,078	946	88%
U (Upland)	n/a	n/a	n/a
N (Non-marketable)	n/a	n/a	n/a
TOTAL	70,003	65,252	93%

Table 2: Planned vs. Actual Harvest Levels by Forest Unit – 2000 to 2005

The factors contributing to the differences between the planned depletion area and actual depletion area include:

1) Poor market conditions for low grade hardwood (i.e., poplar and birch).
2) Unplanned bypass primarily due to errors in the forest resource inventory (i.e., improperly typed stands) or simply changes in stand dynamics (i.e., natural depletion events or normal stand break-down). Small pockets of younger-aged forest stands within harvest blocks also account for some of the unplanned bypass. There was a greater incidence of unplanned bypass associated with the lowland transition and lowland swamp forest units, which contributed to the lower utilization levels of these forest units when compared to the remaining forest units.
3) An inability to harvest all allocated harvest blocks. Block H7 was not harvested due to First Nations issues and portions of block H68 were not operated due to small diameter timber and rugged, inoperable terrain.

2.1.3: 2005-2010 Plan Term

During the 2005-2010 planning term, actual harvest area represented 50% of the planned area. Annualized harvest levels (planned and actual) indicate that for the first 4 years of the 2005-2025 plan term, actual harvest represents 62% of the planned values. Please note that for this analysis the reported harvest areas are only for the first 4 years of the 5 year term. Depletion levels for the final year of the plan were not available for the preparation of this report. The achievement by forest unit is summarized in table 3.

Forest Unit	*Planned Harvest Area (5 years)*	*Harvest To Date*	*Percent Harvest to Date*
Pn1 (PJ1)	2,209	1,237	56%
Upc (SF1)	16,628	6,347	38%
Lsf (SB1)	26,035	13,488	52%
Upd (SP1)	2,272	1,301	57%
Lswp (LC1)	7,596	3,695	49%
Upm (MW2)	7,969	4,675	59%
Hwd (PO1, BW1)	10,554	5,650	54%
Ltn (Lowland transition)	n/a	n/a	n/a
U (Upland)	n/a	n/a	n/a
N (Non-marketable)	n/a	n/a	n/a
TOTAL	73,263	36,393	50%

Table 3: Planned vs. Actual Harvest Levels by Forest Unit – 2005 to 2009

The factors contributing to the differences between the planned depletion area and actual depletion area for this planning term include:

1) Unplanned bypass due to errors in the forest resource inventory, changes in stand dynamics, small pockets of younger-aged forest stands or unmarketable species (i.e., poplar).
2) Curtailment of forest operations due to very poor economic conditions experienced by the North American forest industry. Most, if not all facilities associated with the Gordon Cosens Forest took varying degrees of downtime as a result of historically poor market conditions. This has led to a dramatic decrease in harvest levels, not only on the GCF, but across all of Canada.

3) Related to the previous point, there has been a greater emphasis on the Tembec freehold during the 2005-2010 plan term, in an attempt to reduce costs to aid with the difficult economic situation currently facing the local forest industry. As a result, there has been less harvesting on the Crown Forest comprising the GCF. Table AR-7 does not include harvesting activities that have taken place on the Tembec freehold property.
4) To a lesser extent, focus has shifted to an area of significant blowdown on the GCF, which occurred during 2006. The subsequent salvage operations directed harvesting efforts away from regular harvest that was allocated as part of the plan. Lower productivity levels resulted in less area harvested than would have occurred if efforts were focused on areas of regular harvest.

As indicated in the table 3, the harvest to date is on average 30% less than the forecasted levels for year 4 of the 2005-2010 plan term.

2.1.4: All Terms

As indicated in table AR-7, there has been a general decrease in planned harvest volume since the 1995-2000 term. The annualized planned harvest level has decreased from 21,970 ha to 11,906 ha for the 2010-2012 forest management plan. This represents a 46% decrease in harvest area when comparing these terms. A comparison of the 2005-2010 term to the current term indicates a 19% decrease in planned harvest area. This decrease is attributed to the following factors: 1) an inability to fully allocate the forecast harvest area (12,137 ha/year) and 2) increased ecological constraints associated with the 2010-2012 FMP. The reduced area has subsequently led to decreased harvest volumes over the four plan terms.

2.2 Summary of Planned and Actual Harvest Volume

Table AR-8 provides a summary of annualized planned and actual harvest levels for the 1995-2000, 2000-2005 and 2005-2010 planning terms. The forecasted annualized harvest levels for the current (i.e., 2010-2012) plan are also outlined in the table. Table RPFO-4 was the information source for the 1995-2000 term and table AR-4 was used for the 2000-2005 and 2005-2010 planning terms (source for 2008-2009 term was table AR-1 from 2009 FMPM). The values reported for the current plan were obtained from table FMP-18. It should be noted that the actual harvest volumes for the 2005-2010 plan reflect annualized values for the first 4 years of the 5 year plan period. The forecasted harvest volumes were derived from the OMNR endorsed Long-term Management Direction developed for the current forest management plan.

2.2.1: Spruce, Pine and Fir (SPF) Harvest Volumes

The following table outlines the planned and actual SPF harvest volumes for the current and the previous 3 plan terms.

		Volume ('000 m3) - Annualized		
Species Group	Plan Term	Planned Volume	Actual Volume	% Utilized
Spruce, Pine and Fir	1995-2000	1,255.0	1,232.7	98%
	2000-2005	1,236.4	1,079.7	87%
	2005-2010	1,109.6	804.8	73%
	2010-2012	899.6	n/a	n/a

Table 4: Planned vs. Actual SPF Harvest Volumes

As outlined in the previous table, the utilization of SPF relative to the planned volumes has decreased since the 1995-2000 plan term. The difference in planned and actual harvest volumes can be attributed to the same factors impacting the actual harvest areas outlined above (e.g., unplanned bypass, poor markets, increased focus on Tembec freehold, etc.). An additional trend worth noting is the decrease in planned volume for each successive term. The planned SPF volume for the 2010-2012 is 28% less relative to the 1995-2000 term. This decrease can be attributed to a number of factors including: 1) a skewed ageclass distribution, 2) increased ecological constraints, and 3) the use of a spatial model for the 2010-2012 FMP.

2.2.2: Hardwood Harvest Volumes

Table 5 outlines the planned and actual hardwood harvest volumes for the current and the previous 3 plan terms.

		Volume ('000 m3) - Annualized		
Species Group	**Plan Term**	**Planned Volume**	**Actual Volume**	**% Utilized**
Hardwood (Po, Bw)	1995-2000	163.3	150.2	92%
	2000-2005	515.3	245.0	48%
	2005-2010	366.0	139.3	38%
	2010-2012	402.4	n/a	n/a

Table 5: Planned vs. Actual Hardwood Harvest Volumes

As outlined in table 5, the utilization of hardwoods relative to the planned volumes has been relatively poor over the past 2 planning terms. The primary factor leading to the poor utilization is the lack of market for the OSB-grade poplar and white birch fiber from the GCF. This issue was greatest during the 2005-2010 plan term. During this term, only 539 m3 of OSB-grade poplar has been harvested since 2007-2008. A total of 71,831 m3 has been harvested since 2006-2007. The majority of the poplar and white birch volumes harvested on the forest over the past several years were destined to the veneer users associated with the GCF. A biomass market emerged during the 2005-2010 plan term which aided the utilization of hardwood. However, this market was primarily the result of insufficient biomass being generated for the Kapuskasing newsmill due to production curtailments of local area sawmills. It is expected that with increased sawmill production the need for biomass operations will decrease potentially impacting the amount of hardwood volume used from the forest.

2.2.3: Other Conifer (Cedar and Larch) Volumes

Table 6 outlines the planned and actual other conifer harvest volumes for the current and the previous 3 plan terms.

		Volume ('000 m3) - Annualized		
Species Group	**Plan Term**	**Planned Volume**	**Actual Volume**	**% Utilized**
Other conifer (La, Ce)	1995-2000	0.0	1.7	n/a
	2000-2005	63.1	4.1	7%
	2005-2010	81.4	7.6	9%
	2010-2012	109.7	n/a	n/a

Table 6: Planned vs. Actual Other Conifer Harvest Volumes

Cedar and larch volumes from the Forest have been traditionally used in small amounts mainly by small, local operators and fuelwood users. These uses are expected to continue as part of the 2010-2012 GCF FMP.

2.3 Summary of Planned and Actual Renewal, Tending and Protection Operations

Table AR-9 provides a summary of annualized planned and actual regeneration levels for the 1995-2000, 2000-2005 and 2005-2010 planning terms. The forecasted levels for the current (i.e., 2010-2012) plan are also outlined in the table. Table RPFO-7 was the information source for the 1995-2000 term and table AR-7 was used for the 2000-2005 and 2005-2010 planning terms. The values reported for the current plan were obtained from table FMP-21. It should be noted that the actual regeneration levels for the 2005-2010 plan reflect annualized values for the first 4 years of the 5 year plan period.

2.3.1: Renewal Activities

The following table outlines the renewal activities carried out on the forest since the 1995-2000 plan term.

Operation	1995-2000			2000-2005			2005-2009		
	Planned	Actual	% Planned	Planned	Actual	% Planned	Planned	Actual	% Planned
Renewal									
Natural Regeneration									
Total Natural Regeneration	72,698	68,656	94%	45,098	43,988	98%	47,561	34,187	72%
Artificial Regeneration									
Planting	20,309	24,368	120%	20,285	25,766	127%	22,900	15,253	67%
Seeding	2,750	1,710	62%	2,500	3,670	147%	2,800	697	25%
Scarification	500	0	0%	0	0	-	0	0	-
Total Artificial Regeneration	23,559	26,078	111%	22,785	29,436	129%	25,700	15,950	62%
Total Renewal	96,257	94,734	98%	67,883	73,424	108%	73,261	50,137	68%
Artificial Retreatment									
Planting	0	0	-	0	86	-	0	0	-
Seeding	0	0	-	0	0	-	0	0	-
Total Retreatment	0	0	-	0	86	-	0	0	-
Total Renewal and Retreatment	96,257	94,734	98%	67,883	73,510	108%	73,261	50,137	68%

Table 7: Planned vs. Actual Renewal Activities

The actual number of hectares renewed during the 1995-2000 and 2000-2005 planning terms closely matches the planned hectares for each term. The hectares renewed using natural treatments during these two planning terms is slightly less than the planned hectares. This underachievement can be attributed to a number of factors including higher than expected levels of bypass in low ground sites resulting in less area harvested, therefore less area to renew, as well as more area being renewed using artificial regeneration techniques reducing the area available for natural treatments. For the 2005-2009 period, the actual hectares renewed are currently 68% of the planned hectares for the 5 year term. Given the values listed above represent activities for the first 4 years of the 2005-2010 term, the area actually renewed should be approximately 80% of the planned values. This underachievement is due to the decreased harvest levels associated with this planning term (an explanation for the reduced harvest levels is provided above), resulting in less area to renew.

2.3.2: Site Preparation Activities

The following table outlines the site preparation activities carried out on the forest since the 1995-2000 plan term.

Operation		1995-2000			2000-2005			2005-2009		
		Planned	Actual	% Planned	Planned	Actual	% Planned	Planned	Actual	% Planned
Site Preparation (mechanical, chemical, prescribed burn)										
Mechanical		8,350	12,583	144%	10,000	9,389	94%	8,350	14,278	171%
Chemical	Aerial	0	253	-	2,500	1,729	69%	8,350	1,458	17%
	Ground	0	0	-	0	0	-	0	0	-
Prescribed Burn	High Complexity	1,900	0	0%	2,500	0	0%	2,500	0	0%
	Slash Pile Burn	0	0	-	3,000	7,336	245%	29,560	0	0%
Total Site Preparation		10,250	12,855	125%	18,000	18,454	103%	48,760	15,736	32%

Table 8: Planned vs. Actual Site Preparation Activities

Site preparation activities were consistent from 1995 to 2005. There was a slight overachievement during the 2 plan terms comprising this 10 year period. However, there was a noticeable shift in the site preparation methods used during this time. Commencing with the 2000-2005 planning term, chemical site preparation was used as a site preparation technique on the GCF. The increase in chemical methods has led to less mechanical site preparation planned and carried out on the forest. These trends hold true for the 2005-2009 planning term as well. In addition to these changes, the local industry was successful is using slash pile burning as a site preparation technique during the 2000-2005 term. As outlined in table 8, this is the only plan term where prescribed burn site preparation techniques were carried out on the Forest.

Great effort has been spent by Tembec staff in recent years in an attempt to re-introduce fire as a site preparation technique on the Forest. Tembec staff has worked with OMNR Fire staff in an attempt to reduce the red tape and high cost associated with these activities. These efforts have addressed some of the concerns associated with burning, however neither a slash pile burning or prescribed burn have been carried out on the forest since the 2000-2005 term.

For the 2005-2009 period the amount of area site prepared is significantly less than the planned hectares. The shortfall is primarily associated with an inability to carry out slash pile burning activities on the Forest. It should be mentioned that the actual hectares reported for mechanical site preparation during the 4 year term includes areas slash piled (10,600 ha). Other shortfalls can be attributed to a reduced artificial renewal program resulting in less area requiring site preparation.

2.3.3: Tending Activities

The following table outlines the tending activities carried out on the forest since the 1995-2000 plan term.

Operation		1995-2000			2000-2005			2005-2009		
		Planned	Actual	% Planned	Planned	Actual	% Planned	Planned	Actual	% Planned
Tending										
Cleaning										
Manual		0	0	-	500	0	0%	1,000	0	0%
Mechanical		0	0	-	500	0	0%	500	0	0%
Chemical	Aerial	40,327	37,506	93%	46,000	32,379	70%	41,800	21,421	49%
	Ground	0	0	-	500	0	0%	500	0	0%
Prescribed Burn	High Complexity	0	0	-	0	0	-	0	0	-
Spacing, Pre-Commercial Thinning, Improvement Cutting										
Clearcut and Shelterwood Silvicultural Systems (even-aged)		0	0	-	0	283	-	0	133	
Selection Silvicultural System (uneven-aged)		0	0	-	0	0	-	0	0	
Total Tending		40,327	37,506	93%	47,500	32,662	69%	43,800	21,554	47%

Table 9: Planned vs. Actual Tending Activities

As indicated in table 9, the primary tending activity carried out on the Forest is the aerial application of herbicides. The usage of herbicides on the GCF has trended down since the 1995-2000 term. As outlined above the amount of hectares treated in 1995-2000 was 37,506 ha, which decreased to 32,379 ha for 2000-2005 and 21,421 ha for the first four years of the 2005-2010 term. Using annualized numbers, the area tended during

2005-2010 was 5,355 ha versus 7,501 ha for 1995-2000, which represents a 29% reduction in area treated using herbicides. This reduction can be partly attributed to Tembec's increased efforts to judiciously use herbicides. Efforts include increased emphasis on pre-spray surveys followed by stratification of planned spray blocks resulting in a more efficient use of herbicide. It is anticipated that the amount of area tended will decrease in the future due to increased public concern over the usage of herbicides plus conditions tied to FSC certification.

Commercial thinning was carried out as research and development trials during the 2000-2005 and 2005-2010 planning terms. It is anticipated that this activity will continue as part of the 2010-2012 term as part of intensive regeneration activities on the Forest.

No protection programs were carried out on the GCF during the three previous planning terms (i.e., since 1995).

2.4 Summary of Harvest and Regeneration Trends

Table AR-10 provides a summary of the harvest and regeneration levels for areas harvested on the GCF commencing as part of the 1985-1990 planning term. Achievements are reported for three plan terms: 1985-1990, 1990-1995 and 1995-2000 (partly reported). For table AR-10, forest units were amalgamated given the forest unit changes over the different plan terms and difficulty in relating old and new definitions. Regeneration levels cannot be reported for areas harvested since 1999 as the free-to-grow program has yet to be carried out for these areas. Free-to-grow (FTG) assessments are carried out on average 11 years following harvest. Therefore areas harvested in 1999 aren't scheduled for assessment (i.e., FTG) until 2010. Therefore, the values reported for 1995-2000 are incomplete (except for harvest area) due the timing associated with FTG assessments.

For 1985-1990 76,280 ha were harvested on the GCF. The area surveyed as part of the FTG program exceeds the area harvested for this same period by 123,111 ha. The total area surveyed during 1985-1990 was 199,391 ha. This surplus of surveyed area was due to the inclusion of large areas of natural barren and scattered sites primarily associated with spruce budworm infestations during the 1970's and 1980's. As outlined in table AR-10, 158,543 ha were successfully regenerated, which equates to a renewal success rate of 81%.

During 1990-1995 62,376 ha were harvested on the, of which 61,930 ha (or 99%) was assessed as part of past FTG programs. Of the area assessed, 59,099 ha (95%) were deemed regenerated. The area unavailable for regeneration represents roads and landings which is estimated at 4% of the area planned for harvest. This estimate is based upon road and landings field surveys carried out on the Forest.

Free-to-grow assessments have not been completed for the remaining 5 year terms outlined in table AR-10. For example, years 1995, 1996, 1997 and 1998 have been assessed for the 1995-2000 term. The remaining years (i.e., 1999 and 2000) won't be completed until the summer of 2011 (1999 during 2010 and 2000 during 2011). A review of the 2006 to 2008 annual report FTG information (i.e., harvest that occurred between 1995 to 1997) indicate that 48,830 ha were assessed as FTG out of 50,785 ha surveyed. This translates into a regeneration success rate of 96%. Of the 4% deemed not

successfully regenerated (1,956 ha) many of these hectares may only require tending or more time to be declared as FTG.

2.5 Summary of Forest Condition for the Available Managed Crown Productive Forest

Table AR-11 provides a summary of the available managed Crown Productive Forest by forest unit for the 1995-2000, 2000-2005, 2005-2010, and 2010-2012 planning terms. The following tables were used as information sources to populate table AR-11: Table 4.9 of the 1995-2000 FMP, table FMP-9 from the 2000-2005 and 2005-2010 FMPs, and table FMP-4 for the 2010 plan start values. The plan end and projections for the current plan were derived from the OMNR endorsed Long-term Management Direction developed for the 2010-2012 FMP.

The following table outlines the change in available area reported in the current and past 2 planning terms. This comparison does not include the 1995-2000 term as the forest stands for this term were classified in such a manner that comparison with the remaining terms is difficult.

Forest Unit	Planning Term			
	2000-2005	2005-2010	2010-2012	Difference in Area (%)
Pn1 (PJ1)	34,113	32,751	24,651	-28%
Upc (SF1)	338,670	342,002	278,514	-18%
Lsf (SB1)	433,631	470,645	444,059	2%
Upd (SP1)	40,835	33,921	137,402	236%
Lswp (LC1)	110,015	135,946	79,766	-27%
Upm (MW2)	335,109	266,081	285,489	-15%
Hwd (PO1 + BW1)	127,054	177,342	157,690	24%
Ltn	82,275	n/a	n/a	n/a
Total	1,501,702	1,458,688	1,407,571	-6%

Table 10: Comparison of Available Managed Crown Productive Forest by Forest Unit: 2000-2005 vs. 2010-2012 FMPs

The total available managed Crown productive forest has decreased by 6% when comparing the 2000-2005 and 2010-2012 total areas. This change is primarily attributed to changes in the forest unit definitions used for the different plan terms. It should be noted that traditionally, forest units on the Gordon Cosens Forest have been based on eco-site type information that has been linked directly to the Forest Resource Inventory (FRI) through the use of forest unit descriptors that describe site and stand composition features associated with each forest stand. This approach began to change with the 2005-2010 FMP when the forest units developed for that plan were adjusted slightly to align better with the North East Region (NER) standard forest unit nomenclature. Similar adjustments were also made for the 2010-2012 FMP based upon direction from OMNR Regional planning staff. Despite these adjustments, the forest units used for the current

and past plan terms are similar in nature. An example of change resulting from forest unit updating is the creation of a BOG forest unit for the 2010-2012 FMP. The BOG forest unit was not included in the 2005-2010 plan and this area (BOG area for 2010-2012 FMP) was distributed across a number of forest units used for the 2005-2010 FMP, primarily the LC1 and SB1 forest units. The BOG forest unit (42,540 ha) was unavailable forest (classified as protection forest) for 2010-2020 resulting in less available managed Crown productive forest when compared to the 2005-2010 planning term. The largest observed change is associated with the Upd (SP1) forest unit. This forest unit increased 236% in area when comparing the 2010-2012 and 2000-2005 plans. The increased area can be directly attributed to OMNR direction provided to the 2010-2012 GCF FMP planning team resulting in a significant change to the definition of this forest unit.

2.6 Summary of Habitat for Species at Risk and Selected Wildlife Species

Table AR-12 provides a summary of habitat for species at risk and selected wildlife species used for the 2000-2005, 2005-2010, and 2010-2012 planning terms. The following tables were used as information sources to populate table AR-12: table FMP-5 from the 2000-2005 and 2005-2010 FMPs, and table FMP-8 plus the OMNR endorsed Long-term Management Direction for the 2010 plan start and projected values. It should be noted that for the 2010-2012 FMP the number of selected wildlife species was reduced as compared to the previous planning terms. However, the entire OMNR habitat matrix was built into the Patchworks model used to develop the Long-term Management Direction for the 2010-2012 FMP. The model output was used to populate the 2010-2012 FMP results for many species listed in table AR-12.

Wildlife Species	Past Plans		Current Plan	Difference in Area (%)
	2000-2005	2005-2010	2010-2012	
Blue-spotted Salamander*	0	0	105,793	-
Spruce Grouse	5,340	3,626	10,625	99%
Ruffed Grouse	52,608	53,928	234,366	345%
Great Grey Owl	126,255	124,000	145,310	15%
Black-backed Woodpecker	198,198	163,547	285,472	44%
Pileated Woodpecker	43,049	50,236	276,302	542%
Least Flycatcher	166,622	222,803	233,212	40%
Boreal Chickadee	238,239	201,199	658,554	176%
Ruby-crowned Kinglet	407,823	412,023	705,152	73%
Bay-breasted Warbler	369,708	335,914	514,320	39%
White-throated Sparrow	389,777	196,680	830,478	113%
Snowshoe Hare	281,834	290,091	382,789	36%
Northern Flying Squirrel	455,545	412,319	236,258	-48%
Deer Mouse	99,995	98,365	322,250	222%
Black Bear (foraging)	30,863	4,243	62,530	103%
Black Bear (fall, winter)	213,881	186,592	137,096	-36%
Marten	257,290	364,415	522,361	103%
Lynx	281,834	290,091	179,619	-36%
Woodland Caribou (aspatial)	6,837	5,860	n/a	-
Moose (foraging)	95,448	91,494	59,636	-38%
Moose (winter)	503,148	468,157	279,918	-44%
Red-breasted Nuthatch	n/a	n/a	217,313	-

Table 11: Comparison of Preferred Habitat for Species at Risk and Selected Wildlife Species: 2000-2005 vs. 2010-2012 FMPs

As outlined in table 11, the amount of preferred habitat has increased for most wildlife species referenced in the current and past forest management plans. The preferred habitat has decreased for 5 species when comparing the 2000-2005 and 2010-2012 plan terms. The change in preferred habitat amongst the different plan terms can be attributed to the following factors: 1) changes in forest unit definitions, 2) changes to the OMNR habitat matrix, and 3) updates to the forest resource inventory resulting from harvest operations and assessments of regeneration (i.e., FTG).

2.7 Summary of Assessment of Regeneration and Silvicultural Success

Table AR-13 provides a summary of assessment of regeneration and silviculture success associated with the 2005-2010 plan term. The source of this information is table AR-14 from the 2005-2006 to 2006-2007 annual reports, as well as the FTG coverage generated for the 2008 Annual Report (table AR-13 is only required for the Year 7 and Year 10 annual reports as per the 2009 FMPM). The FTG results for the final year (i.e., 2009-2010) of the 2005-2010 plan term are not included in table AR-14, as at the time of writing the FTG program for the final year of the FMP had not been completed.

As outlined in the following table, 71,983 ha have been assessed as part of the FTG program for the 2005-2010 FMP. These hectares equate to 78% of the forecasted hectares for the planning term. Free-to-grow assessments as typically carried out 11 years following harvest, therefore table AR-14, as well as table 12, summarize the regeneration and silviculture success of stands depleted between 1994 and 1997. Assessments were also performed in "non-target" areas, which are comprised of historical barren and scattered areas, as defined in the current forest resource inventory. These historical barren and scattered areas are within areas of historical depletions.

	Area Assessed (ha)				
	Area Successfully Regenerated			Area Not Successfully Regenerated	Total
Forest Unit	Projected Forest Unit	Other Forest Unit	Total		
All Forest Units	63,552	4,590	68,143	3,841	71,983
% of Total Area Assessed	88%	6%	95%	5%	100%

Table 12: Summary of Regeneration and Silviculture Success – 2005 to 2009 FTG Program

The total hectares assessed over the 4 year period were depleted primarily by harvesting (71,870 ha). The remaining 113 hectares were depleted by natural disturbance events. As indicated above, 88% of the assessment area was regenerated to the projected forest unit (i.e., a silvicultural success) and an additional 6% were regenerated to another forest unit. Therefore, a 95% regeneration success rate has been observed for the areas assessed from 2005-2009. The areas that were not successfully regenerated (NSR) are in most cases associated with naturally regenerating stands that may require tending or additional time to meet height or stocking requirements. They will be reassessed at a later date, as prescribed by the

assessor carrying out the aerial survey. Further regeneration treatments may be used as required on these sites to ensure they are sufficiently regenerated.

2.8 Assessment of Objective Achievement

Table AR-14 provides an assessment of objective achievement associated with the 2005-2010 plan term. Table FMP-12 was used as the source of information to complete table AR-14. The categorization of the 2005-2010 FMP objectives into qualitative and quantitative objectives is as per table FMP-12. The assessment of objective achievement was made following the selection of the Selected Management Strategy for the FMP (i.e., table FMP-12) or following the implementation of the plan. As outlined in table AR-14, most plan targets and objectives were met for the 2005-2010 FMP. As indicated within the accompanying table, targets were met for all objectives except in the following instances: 1) available harvest area for BW1, MW2 and PJ1 forest units in the medium and long term, 2) the amount of preferred habitat for 7 of the 22 species associated with the FMP, 3) the annual SPF volume (surplus to Spruce Falls requirements) for use at other processing facilities outlined in Appendix E and F of the Sustainable Forest Licence , and 4) the forest renewal limits for the SF1-Extensive and MW2-Extensive treatment packages. These assessments occurred upon assessment of the Selected Management Strategy and were acceptable to the planning team. Please refer to table AR-14 for an assessment of each plan objective.

3.0 Conclusion

This trend analysis shows that plan targets and objectives were largely met during the past three forest management plans written for the Gordon Cosens Forest. For a more detailed review of the implementation of the 1995, 2000 and 2005 FMPs, the 1995 RPFO, 10-year Annual Report (2004), and 2005-2008 Annual Reports provide detailed discussion of all aspects of the Forest Management Plans. In the preparation of the 2010 FMP and implementation of the first year of operations on the Gordon Cosens Forest, Tembec is moving forward to meet or exceed obligations and commitments, in an innovative and positive manner. New and ongoing initiatives include maintaining Forest Stewardship Council (FSC) certification and Tembec's Forever Green® Environmental Management Program Guiding Principles. Tembec's continued commitment to working with the community can be seen through involvement in the Local Citizens Committee (LCC), its relationships with various forest stakeholders as well as the general public.

MANAGEMENT UNIT NAME: Gordon Cosens Forest (MU438)
TRENDS ANALYSIS FOR 2010 GCF IFA

AR-7: Summary of Planned and Actual Harvest Area

	Area (ha) - Annualized									
	PLANNED HARVEST			ACTUAL HARVEST						
	Past Plans			Past Plans			Current Plan (2010-2012)			
									Projections	
Forest Unit	1995-2000	2000-2005	2005-2010	1995-2000	2000-2005	2005-2009	2-Year Planned Harvest	Actual Harvest	Medium-Term 2030-2035	Long-Term 2110-2115
Pn1 (PJ1)	938	437	442	796	412	309	137	n/a	188	34
Upc (SF1)	n/a	3,095	3,326	n/a	2,967	1,587	755	n/a	3,519	2,365
Lsf (SB1)	6,084	3,827	5,207	5,121	3,574	3,372	4,111	n/a	3,709	4,413
Upd (SP1)	n/a	274	454	n/a	212	325	1,973	n/a	645	1,079
Lswp (LC1)	1,977	1,181	1,519	1,440	986	924	557	n/a	454	262
Upm (MW2)	n/a	3,486	1,594	n/a	3,308	1,169	2,021	n/a	2,218	3,364
Hwd (PO1, BW1)	n/a	1,485	2,111	n/a	1,402	1,413	2,355	n/a	1,762	885
Ltn (Lowland transition)	n/a	216	n/a	n/a	189	n/a	n/a	n/a	n/a	n/a
U (Upland)	11,939	n/a	n/a	10,669	n/a	n/a	n/a	n/a	n/a	n/a
N (Non-marketable)	1,031	n/a	n/a	668	n/a	n/a	n/a	n/a	n/a	n/a
Total	21,970	14,001	14,653	18,695	13,050	9,098	11,906	n/a	12,495	12,402

MANAGEMENT UNIT NAME: Gordon Cosens Forest (MU438)
TRENDS ANALYSIS FOR 2010 GCF IFA

AR-8: Summary of Planned and Actual Harvest Volume

	Volume ('000 m^3) - Annualized									
	PLANNED HARVEST VOLUME			ACTUAL HARVEST VOLUME						
	Past Plans			Past Plans			Current Plan (2010-2012)			
									Projections	
Species	1995-2000	2000-2005	2005-2010	1995-2000	2000-2005	2005-2009	Planned Harvest	Actual Harvest	Medium-Term 2030-2035	Long-Term 2110-2115
Jack Pine	100.1	62.9	59.1	144.2	61.3	73.3	73.0	n/a	42.8	57.8
Spruce (Sb + Sw)	1,070.2	1,085.0	1,000.3	1,052.3	1,000.6	721.5	798.9	n/a	766.4	881.8
Balsam Fir	84.8	88.5	50.2	36.2	17.8	10.0	27.8	n/a	89.9	72.7
Other Conifer (Ce + La)	0.0	0.0	0.0	1.7	0.0	0.0	0.0	n/a	0.0	0.0
Cedar	0.0	25.5	29.5	0.0	2.2	4.7	34.8	n/a	21.7	23.1
Larch	0.0	37.6	51.9	0.0	1.9	2.9	74.9	n/a	62.4	67.8
Aspen	163.3	467.7	327.3	149.3	244.0	137.0	364.1	n/a	299.9	398.4
White Birch	0.0	47.6	38.7	0.9	1.0	2.3	38.3	n/a	32.2	35.1
White Pine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n/a	0.0	0.0
Maple	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n/a	0.0	0.0
Oak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n/a	0.0	0.0
Ash	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n/a	0.0	0.0
Mixed Biofibre	0.0	0.0	0.0	0.0	0.0	27.2	0.0	n/a	0.0	0.0
Total	1,418.3	1,814.8	1,557.0	1,384.6	1,328.8	978.8	1,411.6	n/a	1,315.3	1,536.6

MANAGEMENT UNIT NAME: Gordon Cosens Forest (MU438)
TRENDS ANALYSIS FOR 2010 GCF IFA

AR-9: Summary of Planned and Actual Renewal, Tending and Protection Operations

Operation	Area (ha) - Annualized							
	PLANNED			ACTUAL			PLANNED	ACTUAL
	Past Plans			Past Plans			Current Plan	Current Plan
	1995-2000	2000-2005	2005-2010	1995-2000	2000-2005	2005-2009	2010-2012	2010-2012
Renewal								
Natural Regeneration								
Clearcut Silvicultural System (even-aged)	14,540	9,020	9,513	13,731	8,798	8,547	8,040	n/a
Shelterwood Silvicultural System (even-aged)	0	0	0	0	0	0	0	n/a
Selection Silvicultural System - Selection Harvest (uneven-aged)	0	0	0	0	0	0	0	n/a
Artificial Regeneration								
Planting	4,662	4,057	4,580	4,874	5,153	3,813	2,877	n/a
Seeding	550	500	560	342	734	174	991	n/a
Scarification	100	0	0	0	0	0	0	n/a
Total Renewal	19,251	13,577	14,653	18,947	14,685	12,534	11,907	n/a
Artificial -Retreatment								
Planting	0	0	0	0	17	0	0	n/a
Seeding	0	0	0	0	0	0	0	n/a
Total Retreatment	0	0	0	0	17	0	0	n/a
Site Preparation (mechanical, chemical, prescribed burn)								
Mechanical	1,750	2,000	1,670	2,517	1,878	3,570	610	n/a
Chemical Aerial	0	500	1,670	55	346	365	940	n/a
Ground	0	0	0	0	0	0	0	n/a
Prescribed Burn High Complexity	300	500	500	0	0	0	0	n/a
Slash Pile Burn	0	600	5,912	0	1,467	0	0	n/a
Total Site Preparation	2,050	3,600	9,752	2,571	3,691	3,934	1,550	n/a
Tending								
Cleaning								
Manual	0	100	240	0	0	0	0	n/a
Mechanical	0	100	100	0	0	0	0	n/a
Chemical Aerial	8,145	9,200	8,680	7,501	6,476	5,355	6,850	n/a
Ground	0	100	100	0	0	0	0	n/a
Prescribed Burn High Complexity	0	0	0	0	0	0	0	n/a
Spacing, Pre-Commercial Thinning, Improvement Cutting								
Clearcut and Shelterwood Silvicultural Systems (even-aged)	0	0	0	0	45	33	107	n/a
Selection Silvicultural System (uneven-aged)	0	0	0	0	0	0	0	n/a
Total Tending	8,145	9,500	9,120	7,501	6,520	5,389	6,957	n/a
Protection (Insect Pest Control)				0	0	0		n/a

* Note: Mechanical site preparation area includes mechanical slash piling for 2005-2009 term.

MANAGEMENT UNIT NAME: Gordon Cosens Forest (MU438)
TRENDS ANALYSIS FOR 2010 GCFIEA

AR-10: Summary of Harvest and Regeneration Trends

Forest Unit		Term					
		1985 to 1990	1990 to 1995	1995 to 2000	2000 to 2005	2005 to 2009	2010 to 2012
Upland (Hwd, Upc, Upd, Upm, POI, BWI, SFI, SPI, MW2)	Harvest/Salvage (ha)	n/a	37,535	53,346	39,445	17,973	14,205
	Surveyed (ha)	n/a	36,688	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Regenerated (ha)	n/a	34,804	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Unavailable for Regeneration (ha)	n/a	1,501	2,134	1,578	719	568
	Un-surveyed (ha)	n/a	847	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Percent FU Successfully Regenerated	n/a	95%	not yet assessed	not yet assessed	not yet assessed	not yet assessed
Lowland Spruce Flat (Lsf, SB1)	Harvest/Salvage (ha)	n/a	16,266	25,605	17,870	13,488	8,221
	Surveyed (ha)	n/a	15,799	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Regenerated (ha)	n/a	15,383	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Unavailable for Regeneration (ha)	n/a	651	1,024	715	540	329
	Un-surveyed (ha)	n/a	467	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Percent FU Successfully Regenerated	n/a	97%	not yet assessed	not yet assessed	not yet assessed	not yet assessed
Lowland Swamp (LCI)	Harvest/Salvage (ha)	n/a	3,641	7,198	4,929	3,695	1,113
	Surveyed (ha)	n/a	2,955	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Regenerated (ha)	n/a	2,869	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Unavailable for Regeneration (ha)	n/a	146	288	197	148	45
	Un-surveyed (ha)	n/a	686	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Percent FU Successfully Regenerated	n/a	97%	not yet assessed	not yet assessed	not yet assessed	not yet assessed
Pine (PnI, PH)	Harvest/Salvage (ha)	n/a	2,990	3,982	2,062	1,237	273
	Surveyed (ha)	n/a	2,679	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Regenerated (ha)	n/a	2,637	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Unavailable for Regeneration (ha)	n/a	120	159	82	49	11
	Un-surveyed (ha)	n/a	311	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Percent FU Successfully Regenerated	n/a	98%	not yet assessed	not yet assessed	not yet assessed	not yet assessed
Lowland Transition	Harvest/Salvage (ha)	n/a	n/a	n/a	946	n/a	n/a
	Surveyed (ha)	n/a	n/a	n/a	not yet assessed	n/a	n/a
	Regenerated (ha)	n/a	n/a	n/a	not yet assessed	n/a	n/a
	Unavailable for Regeneration (ha)	n/a	n/a	n/a	38	n/a	n/a
	Un-surveyed (ha)	n/a	n/a	n/a	not yet assessed	n/a	n/a
	Percent FU Successfully Regenerated	n/a	n/a	n/a	not yet assessed	n/a	n/a
Non-marketable	Harvest/Salvage (ha)	n/a	1,944	3,341	n/a	n/a	n/a
	Surveyed (ha)	n/a	3,809	not yet assessed	n/a	n/a	n/a
	Regenerated (ha)	n/a	3,406	not yet assessed	n/a	n/a	n/a
	Unavailable for Regeneration (ha)	n/a	78	134	n/a	n/a	n/a
	Un-surveyed (ha)	n/a	0	not yet assessed	n/a	n/a	n/a
	Percent FU Successfully Regenerated	n/a	175%	not yet assessed	n/a	n/a	n/a
Total	Harvest/Salvage (ha)	76,280	62,376	93,472	65,252	36,393	23,812
	Surveyed (ha)	199,391	61,930	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Regenerated (ha)	158,543	59,099	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Unavailable for Regeneration (ha)	3,051	2,495	3,739	2,610	1,456	952
	Un-surveyed (ha)	0	2,311	not yet assessed	not yet assessed	not yet assessed	not yet assessed
	Percent Successfully Regenerated	80%	95%	not yet assessed	not yet assessed	not yet assessed	not yet assessed

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AR-11: Summary of Forest Condition for the Available Managed Crown Productive Forest

		Area (ha)						
		Past Plans			Current Plan 2010-2012			
							Projections	
Forest Unit	Age/Condition Class	1995-2000	2000-2005	2005-2010	Plan Start 2010	Plan End 2012	Medium-Term 2030	Long-Term 2110
Pnl (Pl1) Clack Pine working group for 1995-2000)	Below Regen Standard	0	0	0	0	0	0	0
	Depleted	5,769	6,798	173	0	0	0	0
	0-20	69	3,816	15,103	8,504	9,615	3,317	1,330
	21-40	2,275	1,525	1,396	4,713	4,964	9,195	4,290
	41-60	1,198	3,013	2,104	2,023	2,174	4,824	3,858
	61-80	10,807	7,503	267	172	146	1,676	3,443
	81-100	17,479	5,729	8,496	5,369	3,550	146	2,852
	101-120	1,991	3,040	1,848	2,805	3,233	2,817	2,856
	121-140	1,462	1,224	1,496	569	278	1,703	1,277
	141-160	2,712	1,416	1,824	495	324	2	1
	161-180	0	49	9	0	352	0	0
	181-200	0	0	44	0	0	0	0
	201+	0	0	0	0	0	0	0
Forest Unit Subtotal		43,762	34,113	32,751	24,651	24,636	23,679	19,906
Upc (SF1)	Below Regen Standard	n/a	0	0	0	0	0	0
	Depleted	n/a	58,484	8,387	0	0	0	0
	0-20	n/a	56,590	102,410	28,995	30,835	30,918	34,267
	21-40	n/a	50,046	59,600	74,948	70,420	29,314	35,283
	41-60	n/a	40,116	49,142	106,352	107,854	73,028	44,821
	61-80	n/a	28,466	16,266	25,345	32,938	99,294	45,512
	81-100	n/a	34,416	39,130	8,232	8,454	34,285	20,746
	101-120	n/a	23,059	13,007	4,648	4,491	4,687	17,073
	121-140	n/a	11,999	12,289	1,938	1,183	2,032	21,546
	141-160	n/a	36,147	41,628	27,416	1,095	9,822	22,362
	161-180	n/a	177	29	639	22,361	1,971	10,863
	181-200	n/a	70	114	0	0	0	0
	201+	n/a	0	0	0	0	0	0
Forest Unit Subtotal		n/a	338,670	342,002	278,514	279,632	284,363	252,474
Lsf (SB1)	Below Regen Standard	n/a	0	0	0	0	0	0
	Depleted	n/a	90,681	14,187	0	0	0	0
	0-20	n/a	43,118	104,672	103,225	129,668	79,550	90,059
	21-40	n/a	61,429	79,136	80,799	86,488	118,663	80,660
	41-60	n/a	48,538	51,418	25,795	25,965	83,025	44,311
	61-80	n/a	29,259	26,822	26,268	27,138	25,526	50,064
	81-100	n/a	23,858	41,042	25,844	25,228	24,301	62,364
	101-120	n/a	28,435	21,166	36,068	32,485	13,187	34,478
	121-140	n/a	26,357	27,769	19,194	13,545	16,445	22,557
	141-160	n/a	81,334	103,961	123,480	12,372	8,716	6,432
	161-180	n/a	504	289	2,977	90,359	10,877	13,730
	181-200	n/a	118	183	393	360	60,714	28,152
	201+	n/a	0	0	15	15	0	0
Forest Unit Subtotal		n/a	433,631	470,645	444,059	443,623	441,005	432,807
Upd (SP1)	Below Regen Standard	n/a	0	0	0	0	0	0
	Depleted	n/a	5,570	21	0	0	0	0
	0-20	n/a	444	3,916	34,392	46,432	33,456	27,931
	21-40	n/a	32	1,103	19,267	20,508	39,849	29,279
	41-60	n/a	34	3,014	4,327	4,577	20,606	34,217
	61-80	n/a	221	1,594	5,101	5,171	5,510	28,560
	81-100	n/a	9	7,930	19,960	16,310	4,412	18,526
	101-120	n/a	17,753	5,719	29,969	26,116	11,536	15,875
	121-140	n/a	1,505	594	6,607	3,849	12,798	4,433
	141-160	n/a	15,276	9,911	17,451	2,256	2,497	2,277
	161-180	n/a	0	0	132	11,950	680	20
	181-200	n/a	0	119	139	69	0	0
	201+	n/a	0	0	58	85	0	0
Forest Unit Subtotal		n/a	40,835	33,921	137,402	137,324	131,345	161,118
Lswp (LC1)	Below Regen Standard	n/a	0	0	0	0	0	0
	Depleted	n/a	11,811	649	0	0	0	0
	0-20	n/a	8,413	22,138	13,374	17,567	12,708	9,106
	21-40	n/a	15,476	18,912	13,375	14,112	15,591	12,696
	41-60	n/a	15,888	20,307	8,072	7,619	14,148	11,737
	61-80	n/a	8,543	8,432	6,624	7,434	7,982	11,714
	81-100	n/a	3,658	6,729	4,092	3,799	6,768	12,043
	101-120	n/a	3,985	4,102	2,738	2,730	3,048	9,227
	121-140	n/a	4,389	6,150	1,858	1,298	1,561	5,210
	141-160	n/a	37,744	48,234	29,035	483	956	2,393
	161-180	n/a	77	168	597	24,680	1,156	2,906
	181-200	n/a	31	125	0	0	18,423	13,506
	201+	n/a	0	0	0	0	0	0
Forest Unit Subtotal		n/a	110,015	135,946	79,766	79,723	82,341	90,539

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AR-11: Summary of Forest Condition for the Available Managed Crown Productive Forest

Upm (MW2)	Below Regen Standard	n/a	0	0	0	0	0	0
	Depleted	n/a	25,320	532	0	0	0	0
	0-20	n/a	42,239	55,096	52,070	62,016	41,927	68,276
	21-40	n/a	79,352	86,929	88,239	85,981	61,627	51,061
	41-60	n/a	59,557	44,305	33,957	38,694	103,415	63,517
	61-80	n/a	42,690	19,081	36,619	37,948	30,331	52,131
	81-100	n/a	27,099	24,558	24,259	20,474	26,885	17,715
	101-120	n/a	33,010	15,367	26,098	16,363	13,065	19,546
	121-140	n/a	6,383	4,350	3,112	9,111	10,012	20,011
	141-160	n/a	19,360	15,827	21,038	1,114	7,464	5,185
	161-180	n/a	31	22	75	17,272	0	0
	181-200	n/a	68	14	21	37	0	0
	201+	n/a	0	0	1	1	0	0
Forest Unit Subtotal		n/a	335,109	266,081	285,489	289,011	294,728	297,436
Hwd (PO1, BW1) (White Birch + Poplar working groups for 1995-2000)	Below Regen Standard	0	0	0	0	0	0	0
	Depleted	22,165	35,626	1,657	0	0	0	0
	0-20	4,230	1,868	38,479	25,687	37,173	43,862	23,182
	21-40	17,195	2,505	11,928	13,931	13,455	32,868	34,846
	41-60	24,658	12,998	17,303	10,298	10,518	13,803	32,052
	61-80	36,682	23,533	15,122	19,717	20,033	8,833	27,709
	81-100	94,861	8,557	35,271	31,751	22,939	14,928	20,788
	101-120	52,437	37,876	48,723	48,155	30,732	12,946	10,586
	121-140	10,576	3,255	6,674	2,757	13,907	15,649	3,283
	141-160	5,718	809	2,160	5,376	2,493	6,544	148
	161-180	0	27	25	18	1,696	0	0
	181-200	0	0	0	0	0	0	0
	201+	0	0	0	0	0	0	0
Forest Unit Subtotal		268,522	127,054	177,342	157,690	152,947	149,434	152,594
Ltn (no related FU in 2005-2025 and 2010-2012 FMPs)	Below Regen Standard	n/a	0	n/a	n/a	n/a	n/a	n/a
	Depleted	n/a	10,703	n/a	n/a	n/a	n/a	n/a
	0-20	n/a	553	n/a	n/a	n/a	n/a	n/a
	21-40	n/a	450	n/a	n/a	n/a	n/a	n/a
	41-60	n/a	647	n/a	n/a	n/a	n/a	n/a
	61-80	n/a	1,124	n/a	n/a	n/a	n/a	n/a
	81-100	n/a	2,508	n/a	n/a	n/a	n/a	n/a
	101-120	n/a	6,712	n/a	n/a	n/a	n/a	n/a
	121-140	n/a	6,198	n/a	n/a	n/a	n/a	n/a
	141-160	n/a	53,366	n/a	n/a	n/a	n/a	n/a
	161-180	n/a	14	n/a	n/a	n/a	n/a	n/a
	181-200	n/a	0	n/a	n/a	n/a	n/a	n/a
	201+	n/a	0	n/a	n/a	n/a	n/a	n/a
Forest Unit Subtotal		n/a	82,275	n/a	n/a	n/a	n/a	n/a
White Pine working group	Below Regen Standard	0	n/a	n/a	n/a	n/a	n/a	n/a
	Depleted	0	n/a	n/a	n/a	n/a	n/a	n/a
	0-20	0	n/a	n/a	n/a	n/a	n/a	n/a
	21-40	0	n/a	n/a	n/a	n/a	n/a	n/a
	41-60	0	n/a	n/a	n/a	n/a	n/a	n/a
	61-80	0	n/a	n/a	n/a	n/a	n/a	n/a
	81-100	0	n/a	n/a	n/a	n/a	n/a	n/a
	101-120	0	n/a	n/a	n/a	n/a	n/a	n/a
	121-140	0	n/a	n/a	n/a	n/a	n/a	n/a
	141-160	62	n/a	n/a	n/a	n/a	n/a	n/a
	161-180	0	n/a	n/a	n/a	n/a	n/a	n/a
	181-200	0	n/a	n/a	n/a	n/a	n/a	n/a
	201+	0	n/a	n/a	n/a	n/a	n/a	n/a
Forest Unit Subtotal		62	n/a	n/a	n/a	n/a	n/a	n/a
Spruce working group	Below Regen Standard	0	n/a	n/a	n/a	n/a	n/a	n/a
	Depleted	189,704	n/a	n/a	n/a	n/a	n/a	n/a
	0-20	12,212	n/a	n/a	n/a	n/a	n/a	n/a
	21-40	98,367	n/a	n/a	n/a	n/a	n/a	n/a
	41-60	58,461	n/a	n/a	n/a	n/a	n/a	n/a
	61-80	41,871	n/a	n/a	n/a	n/a	n/a	n/a
	81-100	128,636	n/a	n/a	n/a	n/a	n/a	n/a
	101-120	24,769	n/a	n/a	n/a	n/a	n/a	n/a
	121-140	31,479	n/a	n/a	n/a	n/a	n/a	n/a
	141-160	367,510	n/a	n/a	n/a	n/a	n/a	n/a
	161-180	0	n/a	n/a	n/a	n/a	n/a	n/a
	181-200	0	n/a	n/a	n/a	n/a	n/a	n/a
	201+	0	n/a	n/a	n/a	n/a	n/a	n/a
Forest Unit Subtotal		953,007	n/a	n/a	n/a	n/a	n/a	n/a

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AR-11: Summary of Forest Condition for the Available Managed Crown Productive Forest

Balsam Fir working group	Below Regen Standard	0	n/a	n/a	n/a	n/a	n/a	n/a
	Depleted	2,739	n/a	n/a	n/a	n/a	n/a	n/a
	0-20	184	n/a	n/a	n/a	n/a	n/a	n/a
	21-40	36,495	n/a	n/a	n/a	n/a	n/a	n/a
	41-60	17,777	n/a	n/a	n/a	n/a	n/a	n/a
	61-80	2,165	n/a	n/a	n/a	n/a	n/a	n/a
	81-100	734	n/a	n/a	n/a	n/a	n/a	n/a
	101-120	60	n/a	n/a	n/a	n/a	n/a	n/a
	121-140	146	n/a	n/a	n/a	n/a	n/a	n/a
	141-160	1,577	n/a	n/a	n/a	n/a	n/a	n/a
	161-180	0	n/a	n/a	n/a	n/a	n/a	n/a
	181-200	0	n/a	n/a	n/a	n/a	n/a	n/a
	201+	0	n/a	n/a	n/a	n/a	n/a	n/a
Forest Unit Subtotal		61,877	n/a	n/a	n/a	n/a	n/a	n/a
Other conifers working group	Below Regen Standard	0	n/a	n/a	n/a	n/a	n/a	n/a
	Depleted	1,352	n/a	n/a	n/a	n/a	n/a	n/a
	0-20	0	n/a	n/a	n/a	n/a	n/a	n/a
	21-40	876	n/a	n/a	n/a	n/a	n/a	n/a
	41-60	2,179	n/a	n/a	n/a	n/a	n/a	n/a
	61-80	363	n/a	n/a	n/a	n/a	n/a	n/a
	81-100	1,178	n/a	n/a	n/a	n/a	n/a	n/a
	101-120	332	n/a	n/a	n/a	n/a	n/a	n/a
	121-140	224	n/a	n/a	n/a	n/a	n/a	n/a
	141-160	17,802	n/a	n/a	n/a	n/a	n/a	n/a
	161-180	0	n/a	n/a	n/a	n/a	n/a	n/a
	181-200	0	n/a	n/a	n/a	n/a	n/a	n/a
	201+	0	n/a	n/a	n/a	n/a	n/a	n/a
Forest Unit Subtotal		24,305	n/a	n/a	n/a	n/a	n/a	n/a
Total		1,351,535	1,501,702	1,458,688	1,407,571	1,406,896	1,406,894	1,406,875

Note: 1995 2000 values from table 4.9; 2000 2005 values from table FMP 9; 2005 2010 values from table FMP 9; 2010 Plan Start values from table FMP 4.
Note: 1995 2000 values from table 4.9 do not include agedasses beyond 141 years.

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AR-12: Summary of Habitat for Species at Risk and Selected Wildlife Species

	Area of Habitat (ha)							
	Past Plans			Current Plan 2010-2012				
				Plan Start	Projections			Plan End
Wildlife Species	1995-2000	2000-2005	2005-2010	2010	Short-Term 2020	Medium-Term 2030	Long-Term 2110	2012
Blue-spotted Salamander*	n/a	0	0	105,793	83,105	69,664	53,310	n/a
Spruce Grouse	n/a	5,340	3,626	10,625	9,109	4,443	1,277	n/a
Ruffed Grouse	n/a	52,608	53,928	234,366	252,444	283,685	253,659	n/a
Great Grey Owl	n/a	126,255	124,000	145,310	132,936	129,073	177,687	n/a
Black-backed Woodpecker	n/a	198,198	163,547	285,472	262,654	229,384	302,447	n/a
Pileated Woodpecker	n/a	43,049	50,236	276,302	242,105	242,972	321,720	n/a
Least Flycatcher	n/a	166,622	222,803	233,212	241,038	263,644	246,312	n/a
Boreal Chickadee	n/a	238,239	201,199	658,554	659,174	707,108	739,598	n/a
Ruby-crowned Kinglet	n/a	407,823	412,023	705,152	705,983	753,960	786,806	n/a
Bay-breasted Warbler	n/a	369,708	335,914	514,320	553,582	595,708	477,542	n/a
White-throated Sparrow	n/a	389,777	196,680	830,478	828,021	734,875	690,823	n/a
Snowshoe Hare	n/a	281,834	290,091	382,789	344,796	278,548	398,888	n/a
Northern Flying Squirrel	n/a	455,545	412,319	236,258	193,698	201,622	304,648	n/a
Deer Mouse	n/a	99,995	98,365	322,250	295,634	292,605	294,431	n/a
Black Bear (foraging)	n/a	30,863	4,243	62,530	44,468	45,980	63,551	n/a
Black Bear (fall, winter)	n/a	213,881	186,592	137,096	108,921	105,969	103,306	n/a
Marten	n/a	257,290	364,415	522,361	450,097	431,501	575,553	n/a
Lynx	n/a	281,834	290,091	179,619	138,683	124,584	242,775	n/a
Woodland Caribou (aspatial)	n/a	6,837	5,860	n/a	n/a	n/a	n/a	n/a
Moose (foraging)	n/a	95,448	91,494	59,636	55,509	65,311	76,262	n/a
Moose (winter)	n/a	503,148	468,157	279,918	234,972	242,607	362,772	n/a
Red-breasted Nuthatch	n/a	n/a	n/a	217,313	175,122	156,960	232,895	n/a

Note: Preferred habitat was not determined for Blue-spotted Salamander in the 2000-2005 and 2005-2010 FMPs.

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AR-13: Summary of Assessment of Regeneration and Silvicultural Success

		Area Assessed (ha)				
		Area Successfully Regenerated			Area Not Successfully Regenerated	Total
Forest Unit	Silvicultural Ground Rule	Projected Forest Unit	Other Forest Unit	Total		
Harvest						
BW1	BW1-EXT-BW1	317	160	477	0	477
	BW1-BAS2-SF1	397	1	398	0	398
	Forest Unit Subtotal	713	161	874	0	874
LC1	LC1-EXT1-LC1	5,035	82	5,117	211	5,328
	LC1-BAS2-LC1	563	8	572	23	595
	LC1-BAS1-LC1	152	0	152	0	152
	Forest Unit Subtotal	5,750	91	5,841	234	6,075
MW2	MW2-EXT-MW2	7,274	523	7,797	86	7,883
	MW2-BAS2-SF1	3,478	495	3,973	125	4,098
	MW2-BAS1-MW2	42	16	58	0	58
	Forest Unit Subtotal	10,794	1,034	11,828	211	12,039
PJ1	PJ1-EXT-MW2	429	92	522	3	525
	PJ1-BAS2-PJ1	1,693	635	2,328	17	2,345
	Forest Unit Subtotal	2,123	727	2,850	20	2,870
PO1	PO1-EXT-PO1	4,640	234	4,874	423	5,297
	PO1-BAS2-SF1	2,240	87	2,327	407	2,734
	Forest Unit Subtotal	6,880	321	7,201	830	8,031
SB1	SB1-EXT-SB1	17,489	22	17,511	1,852	19,363
	SB1-BAS2-SB1	4,882	84	4,966	72	5,038
	SB1-BAS1-SB1	1,026	29	1,056	5	1,061
	Forest Unit Subtotal	23,397	136	23,533	1,929	25,463
SF1	SF1-EXT-SF1	9,896	1,204	11,099	401	11,500
	SF1-BAS2-SF1	3,655	782	4,438	102	4,540
	SF1-BAS1-SF1	291	12	303	73	376
	Forest Unit Subtotal	13,841	1,998	15,839	576	16,415
SP1	SP1-EXT-MW2	0	84	84	3	87
	SP1-BAS2-SP1	13	3	16	0	16
	SP1-BAS1-SP1	0	0	0	0	0
	Forest Unit Subtotal	13	87	100	3	103
	Harvest Subtotal	63,511	4,555	68,066	3,804	71,870
Natural Disturbance						
SB1	SB1-EXT-SB1	2	0	2	26	28
	SB1-BAS2-SB1	0	2	2	0	2
	Forest Unit Subtotal	2	2	5	26	31
LC1	LC1-EXT-LC1	6	0 0	6	0 0	6
	Forest Unit Subtotal	6	0	6	0	6
SF1	SF1-EXT-SF1	10	0	10	11	21
	SF1-BAS2-SF1	0	33	33	0	33
	Forest Unit Subtotal	10	33	43	11	54
MW2	MW2-EXT-MW2	23	0 0	23	0 0	23
	Forest Unit Subtotal	23	0	23	0	23
	Natural Disturbance Subtotal	41	35	76	37	113
	Total	63,552	4,590	68,143	3,841	71,983

MANAGEMENT UNIT NAME: Gordon Cosens Forest (MU438)
TRENDS ANALYSIS FOR 2010 GCFIFA

AR-14: Assessment of Objective Achievement

Management Objective	Indicator	Plan Start Level	Desirable Level	Timing of Assessment	Target	LTMD - Projections: Medium (20 years)	LTMD - Projections: Long (100 years)	Assessment
Quantitative Objectives								
1) To maintain all major boreal forest types (forest units) that are currently found within the landscape.	1.1) % Change in forest unit area from year 2005 Forest Units: LC1 PJ1 SB1 SF1 SP1 MW2 PO1 BW1 Total	 160,455 35,832 535,362 358,129 40,013 288,057 178,167 20,648 1,616,663	+/- 50% of plan start levels	Completion of the Analysis of Management Alternatives	 80,228 35,833 535,363 358,131 40,013 288,059 178,167 20,648 1,536,442	 159,949 34,274 545,676 351,275 42,046 300,145 170,155 28,108 1,631,628	 159,122 31,093 543,391 373,614 60,310 291,890 159,923 13,984 1,633,327	The results indicate that only the SP1 forest unit deviates by more than +/- 50% from the plan start levels. The SP1 forest unit increases 51% over the 100 year horizon. The second greatest change is observed with the BW1 forest unit, which decreases 32% over the 100 year horizon.
	1.2) % Change in forest unit diversity indices Diversity Indices: Shannon-Weiner Heterogeneity Index Simpson's Evenness Index Shannon Evenness Index			Completion of the Analysis of Management Alternatives	 1.540 - 2.567 0.707 - 1.179 0.741 - 1.235	 1.717 0.786 0.826	 1.704 0.784 0.819	The desirable levels were achieved for all diversity indices.
2) To work towards a forest age class structure that is representative of a natural disturbance regime.	2.1) Forest unit area by age at year 2105. Forest Units: LC1 PJ1 SB1 SF1 SP1 MW2 PO1 BW1	 See Table FMP-11		Completion of the Analysis of Management Alternatives		 See Table FMP-11	 See Table FMP-11	As outlined in table FMP-11, the age class distribution approaches the desired condition by year 2105.
	2.2) % Change in forest unit diversity indices Diversity Indices: Shannon-Weiner Heterogeneity Index Simpson's Evenness Index Shannon Evenness Index			Completion of the Analysis of Management Alternatives	 2.300 - 3.833 0.817 - 1.362 0.755 - 1.259	 2.654 0.920 0.872	 2.722 0.928 0.894	The desirable levels were achieved for all diversity indices.
	2.3) % Mature and over-mature by forest unit grouping Forest Unit Grouping: Hardwood Mixedwood Pine Lowland Conifer Upland Conifer	 64.8% 33.1% 46.6% 46.9% 38.7%	15% of each forest unit grouping in mature and over-mature condition	Completion of the Analysis of Management Alternatives	 15% 15% 15% 15% 15%	 45.6% 33.7% 27.3% 33.3% 22.4%	 35.0% 42.7% 21.5% 40.2% 22.8%	The target level of mature and over-mature forest by forest unit grouping was achieved over the medium and long term.
	2.4) % Over-mature by forest unit grouping Forest Unit Grouping:							

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TRENDS ANALYSIS FOR 2010 GCF IFA

AR-14: Assessment of Objective Achievement

Management Objective	Indicator	Plan Start Level	Desirable Level	Timing of Assessment	Target	LTMD - Projections: Medium (20 years)	LTMD - Projections: Long (100 years)	Assessment
Quantitative Objectives								
	Hardwood	37.0%	5% of each forest unit grouping in an over-mature condition	Completion of the Analysis of Management Alternatives	5%	27.9%	8.0%	The target level of over-mature forest by forest unit grouping was achieved over the medium and long term.
	Mixedwood	16.4%			5%	11.1%	17.3%	
	Pine	16.5%			5%	19.5%	6.7%	
	Lowland Conifer	31.5%			5%	19.3%	7.8%	
	Upland Conifer	19.3%			5%	9.2%	6.4%	
3) To provide for a continuous and predictable supply of wood resources, at a competitive cost to Spruce Falls Inc., now and in perpetuity	3.1) Annual volume in cubic metres (m3)							
	Annual SPF Volume:		750,000 m3	Completion of the Analysis of Management Alternatives	750,000 m3	750,000 m3	750,000 m3	The SPF target volume of 750,000 m3 was met over the planning horizon.
4) To provide a predictable supply of competitive cost wood fibre, surplus to Spruce Falls' requirements, towards meeting the needs of other forest resource processing facilities outlined in Appendix E and F of the Sustainable Forest Licence (SFL).	4.1) Annual volume in cubic metres (m3)							
	Annual SPF Volume:		480,000 m3	Completion of the Analysis of Management Alternatives	350,000 m3 (T1)	125,001 m3	481,001 m3	The term 1 target volumes for SPF and Po were met under the selected strategy. The desirable SPF volume was not met over the 100 year horizon. The desirable Po volume was met in term 3 (years 31-40) and was maintained over the remainder of the 100 year horizon.
	Annual Poplar Volume:		340,420 m3		322,000 m3 (T1)	322,035 m3	372,518 m3	
5) To provide the public and local entrepreneurs with opportunities to harvest fuelwood and other forest resources.	5.1) Annual volume in cubic metres (m3)							
	Annual Cedar Volume:		5,000 m3	Completion of the Analysis of Management Alternatives	5,000 m3	22,945 m3	33,812 m3	The cedar target volume of 5,000 m3 was met over the planning horizon. The larch volumes were deemed sufficient to provide for fuelwood opportunities.
	Annual Larch Volume:				none	35,723 m3	56,189 m3	
6) Managed Crown Forest Available for Timber Production	6.1) Forest Unit Area (ha)							
	Forest Units:							
	LC1	135,297	+/- 50% of plan start levels	Completion of the Analysis of Management Alternatives	135,297	130,109	118,527	The results indicate that only the BW1 forest unit deviates by more than +/- 50% from the plan start levels. The BW1 forest unit decreases by 50% over the 100 year horizon. The second greatest change is observed with the SP1 forest unit, which increases 49% over the 100 year horizon.
	PJ1	32,578			32,578	29,904	27,642	
	SB1	456,458			456,458	451,492	414,367	
	SF1	333,615			333,615	317,194	315,516	
	SP1	33,900			33,900	34,822	50,390	
	MW2	265,549			265,549	265,474	209,825	
	PO1	158,509			158,509	144,115	140,822	
	BW1	17,176			17,176	24,088	8,593	
	Total	1,433,082			1,433,082	1,397,198	1,285,682	
7) Forecast AHA available to utilize	7.1) Available harvest area (ha)							
	Forest Units:							
	LC1	1,555	Limit change in available harvest area to no more than 10-20% for each successive decade	Completion of the Analysis of Management Alternatives	Limit change in available harvest area to no more than 10-20% for each successive decade	1,123	1,478	The total available harvest area changed 12% when comparing term 2 and term 3 (i.e., medium term), whereas a comparison of term 9 and term 10 harvest areas changed by 6%. When comparing forest units, the BW1, MW2 and PJ1 forest units exhibited greater than a 20% change
	PJ1	448				219	305	
	SB1	5,215				3,336	5,027	
	SF1	3,408				2,263	2,961	
	SP1	521				333	288	
	MW2	1,763				2,314	1,630	
	PO1	2,014				1,289	1,483	

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AR-14: Assessment of Objective Achievement

Management Objective	Indicator	Plan Start Level	Desirable Level	Timing of Assessment	Target	LTMD - Projections: Medium (20 years)	LTMD - Projections: Long (100 years)	Assessment
Quantitative Objectives								
	BW1 Total	93 15,017	[illegible]		[illegible]	145 11,022	109 13,281	when comparing the aforementioned terms.
8) Marten Habitat	8.1) Preferred habitat area (ha)	364,415		Completion of the Analysis of Management Alternatives		308,771	365,384	
	8.2) % Preferred habitat vs. preferred and marginal habitat	34.3%				28.3%	31.9%	
9) To maintain habitat for selected featured species within the bounds of natural variation.	9.1) Preferred habitat area (ha)							
	Featured Species:							
	Bay-breasted Warbler	335,914			261,374	282,862	306,460	
	Black Bear (fall,winter)	186,592			149,274	165,595	183,577	
	Black Bear (foraging)	4,243			2,590	2,123	1,305	
	Black-backed Woodpecker	163,547			130,838	133,587	164,527	
	Blue-spotted Salamander	n/a			n/a	n/a	n/a	
	Boreal Chickadee	201,199			146,712	150,594	192,142	
	Deer Mouse	98,365			78,692	70,651	69,855	
	Great Grey Owl	124,000			79,641	90,368	91,440	The target levels were met in the medium and long term for 15 of the 22 featured species. Black bear (foraging) habitat proved the most difficult to maintain on the forest, which decreased to 50% of the target value at year 100. In the remaining instances where shortfalls were observed, at least 82% of the target value was achieved. This level of deviation was acceptable to the planning team.
	Least Flycatcher	222,803			150,304	164,415	183,428	
	Lynx	290,091	At or above 20% below lowest level in Benchmark run	Completion of the Analysis of Management Alternatives	189,618	215,607	184,087	
	Marten	364,415			291,532	308,771	365,384	
	Moose (foraging)	91,494			73,195	66,641	66,719	
	Moose (winter)	468,157			374,526	504,483	502,257	
	Northern Flying Squirrel	412,319			316,487	332,651	352,532	
	Pileated Woodpecker	50,236			11,572	36,748	10,095	
	Ruby-crowned Kinglet	412,023			329,618	394,191	442,812	
	Ruffed Grouse	53,928			43,142	56,322	55,132	
	Sharp-shinned Hawk	304,278			243,422	390,914	501,797	
	Snowshoe Hare	290,091			189,618	215,607	184,087	
	Spruce Grouse	3,626			2,767	7,000	8,298	
	White-throated Sparrow	196,680			115,545	147,832	152,111	
	Woodland Caribou	5,860			3,405	3,345	2,949	
	9.2) % Change in habitat unit diversity indices			Completion of the Analysis of Management Alternatives				
	Diversity Indices:							
	Shannon-Weiner Heterogeneity Index				1.976 - 3.294	2.192	2.186	The desirable levels were achieved for all diversity indices.
	Simpson's Evenness Index				0.773 - 1.289	0.858	0.857	
	Shannon Evenness Index				0.730 - 1.217	0.809	0.807	
10) To employ cost effective renewal and tending treatments that will provide for a new free-growing forest that meets all desired benefits.	10.1) A cost effective renewal program as indicated by forecasted revenues and expenditures (i.e., revenues - expenditures) ('000s $)			Completion of the Analysis of Management Alternatives	> $0	$2,377	$2,400	The selected management alternative ensures that revenues exceed the expenses associated with the forecasted renewal and tending programs over the medium and long term.

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AR-14: Assessment of Objective Achievement

Management Objective	Indicator	Plan Start Level	Desirable Level	Timing of Assessment	Target	LTMD - Projections		Assessment
						Medium (20 years)	Long (100 years)	
Quantitative Objectives								
	10.2) Adherence to the annual silviculture budget ('000s $).			Completion of the Analysis of Management Alternatives	$4,300	$3,556	$4,216	The selected management alternative does not exceed the silviculture budget over the medium and long term.
	10.3) Available harvest volume for all species groupings ('000 m3/year)		+/- 15% (maximum) for each successive decade	Completion of the Analysis of Management Alternatives	+/- 15% (maximum) for each successive decade	1,298.67	1,731.97	The total available harvest volume decreased 8% when comparing term 2 and term 3 (i.e., medium term), whereas a comparison of term 9 and term 10 harvest volumes increased by 4%. As such, the harvest volume target was achieved over the medium and long term.
	10.4) A balanced forest renewal strategy incorporating intensive, basic and natural renewal treatments (i.e., % area treated by treatment type). Forest Unit and Treatment Limits (%): LC1-Extensive PJ1-Intensive SB1-Extensive SF1-Extensive SF1-Intensive SP1-Intensive MW2-Extensive MW2-Intensive PO1-Extensive BW1-Extensive			Completion of the Analysis of Management Alternatives	Minimum 85% 60% 90% 30% 40% 30% 40% 30% 60% 60%	85.0% 100.0% 90.0% 42.6% 57.0% 100.0% 30.0% 30.0% 100.0% 59.7%	84.9% 100.0% 89.9% 0.0% 100.0% 54.5% 30.0% 30.0% 80.1% 100.0%	The minimum renewal treatment limits by forest unit were achieved in all cases except for the SF1-Extensive limit in the long term and the MW2-Extensive limit in the short term. In each case, the area scheduled for Extensive treatment received either a Basic or Intensive treatment (i.e., an artificial treatment was applied instead of a natural treatment).
11) To maintain marten core habitat on the forest landscape.	11.1) Proportion of capable marten habitat in suitable condition (10-20% of capable in a suitable condition) within cores between 30 and 50 km2 in size with a minimum of 75% of core habitat being comprised of suitable stands. Deferral Period: Year 1-20 Year 21-40 Year 41-60		10-20% 10-20% 10-20%		10-20% 10-20% 10-20%	Year 1-20 (10.2%), (75.8% suitable) Year 21-40 (10.0%), (76.5% suitable) Year 41-60 (10.2%), (77.9% suitable)		The percent suitable marten core habitat for Year 1-20, Year 21-40 and Year 41-60 are within the acceptable range (10 to 20% suitable) of the target values. This plan target has been achieved.

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AR-14: Assessment of Objective Achievement

Qualitative Objectives	Assessment:
12) To maintain a range of harvest patch sizes across the landscape that follows the same tendencies as the frequency distribution of patch sizes created by natural disturbance (i.e., wild fire).	The strategy developed to address this objective was for the planning team to provide a semi-randomized quilt of various patch sizes of vegetation and successional stages, having forest of various ages. The intended result is a landscape-level forest condition that is as close to the known natural condition as possible and thus as close to natural biodiversity levels as is possible. For each size class, the harvest disturbance patch size target is to create disturbance patches that fall within +/-50 % of the GCF Fire Study / CNFER disturbance levels. Comparison to natural disturbance template indicated a need to provide for more disturbance patches in the 1041-5000 hectare size class. This was a focus during the selection of harvest areas. The objective was deemed to have been met as outlined by figure A-7 (Frequency Distribution of Forest Disturbances by Size Class - Condition at Year 2005 vs 2010). Figure A-7 indicates that the condition at year 2010 shows movement towards the desired range.
	For patches less than 260 ha, a significant difference was observed when comparing the desired condition to the actual condition observed for the Gordon Cosens Forest. The difference can be attributed to a number of factors including: 1) the past application of the moose guidelines, 2) the amalgamation of the highly fragmented Kapuskasing Crown Management Unit with the Gordon Cosens Forest in 2000, and 3) the application of harvest block requirments of the Forest Management Guide for Natural Disturbance Pattern Emulation. The ability of the forest industry to manage harvest patch sizes to stay within the bounds identified in the 2005-2025 FMP is limited by practical considerations of harvesting patches at both ends of scale. Smaller patches will continue to be created by natural disturbance events such as blow down insect infestations and small fires. The largest "functional" patches result from contiguous patches being harvested over several planning terms. These larger patches will contain subtle differences in age and structure by virtue of harvesting the forest annually in timber that must be mature. Wild fires would produce a more uniform age within the patch with a discrete edge. Very large patches may also continue to occur infrequently from catastrophic wild fire events.
13) To ensure that the harvest patches are spatially separated in a manner similar to disturbance patches in the fire origin forest.	The target for this objective was to separate harvest patches from each other by unharvested forest patches to maintain connectivity in the same orientation, where feasible, as a natural disturbance regime while providing habitat area for selected wildlife species and an opportunity for a return harvest in the future (beyond the year 2025). When developing strategies to achieve this objective the following was considered: 1) Ensure that new harvest disturbance patches are separated from older harvest disturbance patches either long enough to allow vegetation in the old disturbance to reach 3 metres in height or twenty years age, whichever occurs first and 2) Where temporal separation is not achievable, the sliding scale spatial separation guidance that is outlined in the Forest Management Guide for Natural Disturbance Pattern Emulation will be utilized to separate harvest disturbance patches. The objective is deemed to have been met. The harvest patch separation objective was achieved by designing a landscape pattern that separated harvest patches from each other by unharvested forest patches. The size and shape of these separation patches varied depending on forest site conditions and ecological functions that are unique to each patch. Short-term achievement of this objective can be measured by looking at landscape pattern visually on maps and by using spatial analysis tools.
14) Residual patch retention objective.	This objective was developed to ensure that harvest patches contain leave areas that mimic, as closely as possible, natural wildfire in terms of size, number, shape, forest composition, orientation and connectivity. The strategy employed to achieve this objective was to apply the NDPE guide, in particular the residual leave targets outlined within table 3 of the guide. During operational planning, staff utilized the NDPE target values and designed the internal configuration of all blocks to contain insular and peninsular leave areas (absolute reserves or NDPE leave area). A review of the 2005-2006 to 2007-2008 harvest areas have indicated that following harvest, the planned NDPE target areas were exceeded following harvest. For the 2005-2006 season an additional 302 ha of residual area remained following harvest compared to the planned levels; for the 2006-2007 season (includes 2005-2006 to 2006-2007 harvest blocks) the planned NDPE target levels were exceeded by 957 ha; for the 2007-2008 season (includes 2005-2006 to 2007-2008 harvest blocks) 1,022 ha. Given this trend, this objective is deemed to have been met.

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AR-14: Assessment of Objective Achievement

Qualitative Objectives	Assessment:
15) To ensure that representative post-disturbance structural elements are left as a result of harvesting.	Two targets were developed to assess this objective. They include: 1) coarse woody debris (maintain a minimum of 10 m3/ha) and 2) maintain a minimum average of 25 well-spaced, standing dead or living trees per hectare, with at least 6 being large, living, high-quality cavity trees or those with future potential to form cavities. Residual structure data has been collected on the forest commencing with the 2000-2020 FMP. These efforts were continued as part of the 2005-2025 FMP involving a number of sources. These sources include: 1) residual structure surveys conducted by Tembec and 2) various research projects (i.e., NEBIE plot network and Intensive Forest Management studies) involving the forest. Residual structure surveys carried out as part of the 2000-2020 and 2005-2025 FMPs indicate that the residual structure targets are at minimum met, and typically are exceeded using the harvesting practices carried out on the forest. For instance, surveys carried out from 2002-2003 and 2005-2006 indicate that on average approximately 37 m3/ha of CWD remains on-site following harvest. During the same period, the upland sites surveyed contained at least 56 stems/ha following harvest, of which no less than 11 stems/ha were greater than 30 cm in DBH. Given harvest practices have not changed during the course of the 2005-2025 FMP, this objective is deemed to have been met.
16) To ensure that all known and newly discovered nesting sites for eagles, hawks, osprey, and herons are protected.	For all known and newly discovered nest sites, strategies consistent with approved guidelines for each species were followed. Strategies within guidelines vary for each individual species and provide a range of prescriptions including such measures as establishing reserves, partial harvesting, timing restrictions, etc. Operational considerations for reporting and protection of known stick nests and strategies regarding nest sites are outlined in Raptor Awareness and Habitat Management document in Appendix 18 of the 2005-2025 GCF FMP. This objective was addressed by developing AoC prescriptions for osprey nests and heron nests using the appropriate MNR guideline. In addition, a working instruction was developed to address stick nests, which was provided to and utilized by operational staff. This document provides clear direction and outlines the reporting mechanism, as well as AoC dimensions required when unknown stick nests are encountered in the field (an identified nest would have the AoC dimensions of the applicable guide applied to the nest). An additional step takento ensure that this objective was achieved included raptor awareness training provided for Tembec staff. Given the above measures, this objective is deemed to have been met.
17) To maintain high conservation value forest attributes on the forest.	High conservation value forest attributes include critical fisheries values (spawning areas, migration routes, lake sturgeon), nesting sites (waterfowl), outlier species (white pine, red pine, black ash), regionally rare species, protected areas (existing parks and identified OLL sites), and rare, threatened or vulnerable species (woodland caribou). Strategies were identified in the 2005-2025 FMP plan text specific to concentrations of red and white pine, black ash, woodland caribou and lake sturgeon. The strategies developed for red pine, white pine and black ash focused on incorporating a range of treatments rather that focus on ensuring that these species will not be reduced to an area less than current levels. For the 2005-2006 to 2008-2009 period, 13 m3 of white pine, 0 m3 of red pine and 1 m3 of black ash were harvested on the Forest. No silviculture treatments were carried out specifically for black ash and red pine given the minimal harvest levels, however 5,000 white pine seedlings were planted in 2008. A number of strategies were developed for woodland caribou including: 1) Continue to provide habitat for woodland caribou and other species by maintaining a range of disturbance patch sizes across the forest over time (patch size objective above), 2) maintain connectivity in both a north-south and east-west orientation to allow for movement of woodland caribou and other wildlife species across the forest (objective for the spatial separation of patches), 3) assessment of larger areas by the OMNR Area Biologist that were harvested in the 1960's, 1970's and 1990's for their suitability as current and future habitat for woodland caribou, 4) applying protection to all known or newly discovered critical caribou habitat, 5) train staff in the identification of caribou including the reporting of sightings, 6) continue to work in caribou research initiatives, and 7) commence looking at large scale habitat requirements for future planning periods.

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Qualitative Objectives	Assessment:
	Initiatives carried out as part of the 2005-2025 FMP to maintain woodland caribou on the Gordon Cosens Forest include: 1) the maintenance of a range of patch size disturbances as outlined above (objective # 12), 2) to spatially separate patches in a manner similar to disturbance patches in a fire origin forest (objective # 13 above), 3) participation in caribou research intitiatives such as the Tembec-Beardmore Case Study (Species at Risk Program Project # : 31-07-S-NE), 4) documenting and mapping caribou sighting locations on the forest (see Tembec-Beardmore Case Study), and 5) development of a caribou recovery strategy with the participation of the OMNR and other organizations for use in the 2010-2012 GCF FMP. The caribou recovery strategy encorporates a number of 50-year deferrals and expands from the Quebec / Ontario border west to the Gordon Cosens Forest. The deferral areas on the Gordon Cosens Forest comprise 6 separate areas, which consist of 155,954 ha of capable caribou habitat. On October 15, 2009 the Ministry of Natural Resources intitated new fishing regulations for Lake Sturgeon in Ontario. In many fisheries management zones, lake sturgeon fishing is not allowed and in others a catch and release program has been instituted. Given these steps, this objective is deemed to have been met.
18) Maintain opportunities for a viable trapping industry by maintaining fur-bearer habitat within the bounds of natural variation.	Strategies developed to address this objective include: 1) maintaining habitat for selected wildlife species within the bounds of natural variation (see above), 2) application of the Guidelines for the Provision of Marten Habitat (see above), and 3) maintain dialogue with trappers that are located in the vicinity of forestry operations, including harvest and access, and assess local site-specific trapper concerns on a case-by-case basis. This objective is deemed to have been met due to the following: 1) fur-bearer habitat (primarily marten) was met over the medium and long term as outlined above, 2) a network of marten core areas were developed and incorporated into the FMP, and 3) continued dialogue with trappers throughout the implementation of the FMP. Dialogue included trapper notification letters sent each year by MNR and Tembec to notify of annual operations, annual public presentations of the AWS (LCC meetings), direct communication (i.e., phone calls), and meetings involving trappers and operational staff. Adjustments were made to operational plans to accommodate trappers. An example includes the relocating / addition of reserves within block F054 to protect trail locations.
19) Maintain opportunities for resource based tourism with licenced outfitters whose operations may be affected by forest management activities during the period of this plan.	The viability of the resource based tourism industry was maintained through the application of the Timber Management Guidelines for the Protection of Tourism Values and the use of Resource Stewardship Agreements (RSAs). As part of plan development, Tembec-Kapuskasing contacted all licensed tourism establishments to seek out parties interested in entering into discussions regarding future forest operations in and around their resource-based tourism value(s) on the Gordon Cosens Forest. Despite efforts only a single RSA was developed for the 2005-2025 FMP. However, a number of AoC prescriptions were developed and incorporated into the FMP with input from various tourist outfitters. Given the input, this objective is deemed to have been met.
20) To plan and manage forest access in a manner that achieves an appropriate balance between accessed areas for those who want access to the forest, and remote roadless and/or functionally roadless areas for those who value this attribute of the forest.	The strategy developed to achieve the balance between accessed areas and remote roadless and/or functionally roadless areas was to develop a road use strategy for all access roads that addresses the environment, effects on other values, construction details or limitations and use management (which includes abandonment). This objective is deemed to have been met as road use strategies were developed and included in the 2005-2025 GCF FMP as outlined within the roads supplemental documentation and table FMP-26.
21) To maintain or enhance future timber yields by intensively managing selected sites.	The strategy developed to address this objective was to maintain or enhance future timber yields by intensively managing selected sites use a variety of tools such as commercial thinning and first generation tree improvement work. Commercial thinning in black spruce and white spruce plantations continued to be undertaken as part of the 2005-2025 FMP through CFSA exemptions outside of the FMP, as research and development trials specific to the Gordon Cosens Forest. Activities carried out in support of this objective include: 1) commercial thinning activities carried out on 133 ha during the plan term, 2) continued support of NESMA plus planting of 1st generation stock, 3) NEBIE trail in block F044, and 4) operational intensive plant in blocks F039 and F045 (>=2,000 seedlings/ha). Given these activities this objective is deemed to have been met.

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Qualitative Objectives	Assessment:
22) To address existing forest health concerns on the forest, such as balsam fir depleted areas, aspen decline areas, and loss of productive land due to slash piles, roads and site disturbance.	A number of strategies were developed to address this objective. Strategies include: 1) slash management, 2) intensively managing productive balsam fir depleted areas to spruce, 3) applying locally developed guide for minimizing site disturbance and site damage, 4) targeting aspen decline and other areas exhibiting signs of decline for harvest and renewal to appropriate species, 5) commercial thinning on a trial basis, and 6) identifying opportunities for salvage operations in aspen decline areas, where feasible. Activities carried out in support of this objective include: 1) slash management activities (piling, biomass harvesting, chipping) on 10,955 ha, 2) the continued application of local guidelines to minimize site disturbance (0.71% area site disturbed for 2005 FMP vs. 0.79% for 2000 FMP), 3) commercial thinning activities carried out on 133 ha, 4) salvage activities in blowdown areas (approximately 1,500 ha harvested), 5) allocation of harvest blocks in upland depleted areas (e.g., F079, F088, F081), and 6) heavy mechanical site preparation in areas of blowdown (non-harvest areas) in preparation for planting. Given these activities this objective is deemed to have been met.
23) To conduct timber management activities in a manner which minimizes and mitigates the impacts on environmental quality.	The strategy developed to address this objective was to show continual improvement towards meeting the full intent of Spruce Falls' environmental policy where applicable, employing an Environmental Management System registered to the ISO 14001 Standard. As per Spruce Falls' implementation of an Environmental Management System that is ISO 14001, the target for this objective will be to work towards continual improvement. The target is deemed to have been met through a variety of mechanisms. Continual improvement on a range of environmental quality issues through setting objectives and targets and implementing associated action plans on Tembec's operations under its Environmental Management System, which is ISO 14001 registered. A number of procedures, internal keys and working instructions have also been introduced to assist in the continual improvement process. In addition, harvest schedules were developed based on consideration of site information and current science that utilized the most appropriate machinery to minimize impact on environmental quality. Specific operational adjustments are made, including limiting operations to upland sites, seasonal operations (i.e., no harvest during break-up and freeze-up) and the use of high floatation equipment, to reduce site disturbance.
24) To minimize the impacts on water quality and aquatic habitat within areas of harvest, renewal, tending and access operations.	The strategy developed to address this objective was to minimize impact on water quality and aquatic habitat by applying appropriate harvest, access and renewal prescriptions to operational areas, and to demonstrate continual improvement on reducing the impact of operations on water quality through consistently taking appropriate mitigative actions when necessary. A slope dependent (30, 50, 70, 90 metre) absolute reserve measured from the waters edge was placed on all permanent streams. Intermittent streams identified on 1:20,000 scale maps received a slope dependent absolute reserve for the first 200 metres from where it enters a permanent stream. The remainder of the stream had a 6 metre no machine reserve. Unmapped intermittent streams located during operations were treated the same as mapped intermittent streams. MoE buffers were applied to areas scheduled for aerial tending. Other operational considerations, such as the use of high floatation equipment, was used to aid in the achievement of this objective. From April 1, 2005 to March 31, 2009 a total of 628 compliance inspections were carried out on operations conducted as part of the 2005-2025 GCF FMP. Of these inspections 8 (8 of 628 or 1.3%) were found to not be in compliance with prescriptions developed to minimize impacts on water quality and aquatic habitat. Given the low occurrence of incidents related to water quality and aquatic habitat, this objective is deemed to have been met.
25) Attempt to minimize any negative impacts that forest management activities may have on other forest users such as anglers & hunters groups, snowmobile associations, bear management areas and commercial bait fisherman.	Measurement of achievement of this objective was derived from the interpretation of public comments, official reviews on the implementation of the plan, negotiations with concerned parties and general acceptance of the local citizen's committee. This objective was met through consultation with other users of the forest (e.g. tourist outfitters, trappers, first nations, etc.), negotiations with concerned parties and the general involvement of the local citizens' committee (LCC) and the public. Consultation efforts included FMP open houses during plan development, annual presentations at LCC meetings, public workshops, field tours, annual notifications of planned operations and one-on-one meetings when requested.
26) To maintain the integrity of the quality fisheries zones located in Chapleau District.	The Chapleau District Fisheries Management Plan (OMNR, 1989) identifies a Quality Fisheries Zone which contains seven areas within Chapleau District. Two of these areas extend into the Gordon Cosens Forest. Forest management operations within the Quality Fisheries Zone had the potential to affect fisheries in these lakes by increasing fishing pressure through improved access. Vehicular access for fishing purposes into these areas, from May 1 to October 21, was, and continues to be prohibited in order to protect these sensitive fisheries. Protection of these areas was provided in the form of access road restrictions.

AR-14: Assessment of Objective Achievement

Qualitative Objectives	Assessment:
27) To protect all known, potential and newly discovered cultural heritage values on the Gordon Cosens Forest.	The strategy developed for this objective was to catalogue all known and potential cultural heritage sites and apply appropriate protection using the Timber Management Guidelines for the Protection of Cultural Heritage Resources, operational procedures developed to protect newly found sites and the AoC prescriptions outlined in Table FMP-17 for known and confirmed High Potential Cultural Heritage (HPCH) values. The archaeological high potential areas were identified using a predictive model (OMNR Heritage Assessment Tool) that uses various sources of geographic information to determine where high potential sites are more likely to exist. In addition to the identification of values, training and awareness of values by field crews was also identified as a means of achieving this objective. This objective is deemed to have been met due to the efforts taken by industry and OMNR staff to identify potential sites (see FMP amendment # 7), the development of AoC prescriptions designed to protect cultural heritage values, which were incorporated into the 2005-2025 FMP, and the existence of a training and awareness program developed to educate industry field staff. The training and awareness program involved a training session held in July of 2005 for all Tembec field staff, supervisors and superintendents and other overlapping licensees. This training session was designed by John Pollock, a licensed archaeologist and delivered by one of his associate archaeologists.

Note: Table FMP-12 was used in addition to the FMP text to complete this assessment.